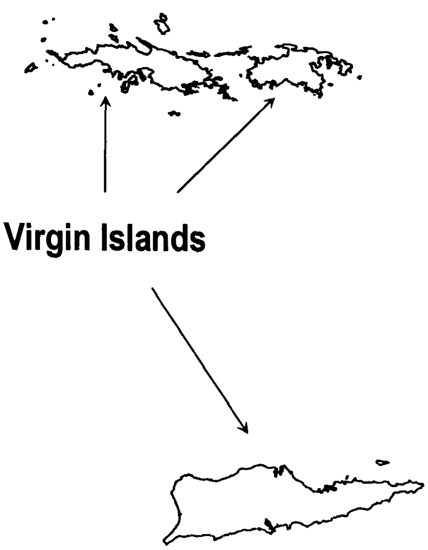
FLOOD INSURANCE STUDY

U.S. VIRGIN ISLANDS



REVISED:
April 16, 2007

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
780000V000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components. Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways and cross sections). In addition, former flood hazard zone designations have been changed as follows.

Old Zone(s)	New Zone
A1 through A30	AE
V1 through V30	VE
B	X
C	X

Initial FIS Effective Date: FIS Report - April 1980
Flood Insurance Rate Map: October 15, 1980
Revisions: The table below includes information on all revisions to this FIS and the accompanying Flood Insurance Rate Map.

Revised Date	Reason for Revision	Comment
November 1, 1985	to change special flood hazard areas	(Flood Insurance Rate Map Only)
March 18, 1987	to add special flood hazard areas, and to change zone designations	(Flood Insurance Rate Map Only)
August 3, 1992	to add undeveloped coastal barriers and otherwise protected areas	(Flood Insurance Rate Map Only)
June 2, 1993	to add base flood elevations, to change special flood hazard areas, to change zone designations, and to reflect updated topographic information	
September 20, 1995	to modify coastal barrier resources system units	(Flood Insurance Rate Map Only)
July 20, 1998	to enlarge coastal barrier resources system units	(Flood Insurance Rate Map Only)
April 16, 2007	to change base flood elevations, to change special flood hazard areas, to update map format, and to incorporate previously issued letters of map revisions	

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FLOOD INSURANCE STUDY
U.S. VIRGIN ISLANDS, ISLANDS OF ST. CROIX, ST. JOHN, AND ST. THOMAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of the U.S. Virgin Islands, including: the islands of St. Croix, St. John, and St. Thomas. This information will be used by the U.S. Virgin Islands, to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP). The information will also be used by local and regional planners to further promote sound land use and floodplain development.

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the territory that will be used to establish actuarial flood insurance rates. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Information on the authority and acknowledgments for each jurisdiction included in this FIS, as compiled from their previously printed FIS reports, is shown below.

Island of St. Croix:	the hydrologic and hydraulic analyses for the original FIS report dated April 16, 1980, were prepared by Tippetts-Abbett-McCarthy-Stratton, for the Federal Insurance Administration (FIA), under Contract No. H-4809. That work was completed in October 1979.
Island of St. John:	the hydrologic and hydraulic analyses for the original FIS report dated April 16, 1980, were prepared by Tippetts-Abbett-McCarthy-Stratton, for the Federal Insurance Administration (FIA), under Contract No. H-4809. That work was completed in October 1979.

Island of St. Thomas: the hydrologic and hydraulic analyses for the original FIS report were prepared by Tippetts-Abbett-McCarthy-Stratton for the Federal Emergency Management Agency (FEMA), under Contract No. H-4809. That work was completed in March 1979. The hydrologic and hydraulic analyses for Turpentine Run in the June 2, 1993, revision were prepared by the U.S. Army Corps of Engineers (USACE), Jacksonville District, for FEMA, under Inter-Agency Agreement No. EMW-89-E-2994, Project Order No. 1. This work was completed in July 1990.

For this revision, the coastal flood hazards analyses for Atlantic Ocean and Caribbean Sea were prepared by Dewberry & Davis, LLC, for FEMA, under Contract No. EMN2003CO5005. The work was completed in February 2006.

The digital base mapping information was provided in digital format by Woolpert via the USACE, Jacksonville District. The mapping was flown at 4,800 feet in February of 1994. Negative scale is 1:9,600 and data were processed by analytical stereoplotter for presentation at a scale of 1:2,400.

Additional digital base mapping information was provided in digital format by National Oceanic and Atmospheric Administration (NOAA) Aircraft Operation Centers and National Geodetic Survey. The mapping was flown in 1999.

The digital FIRM was produced in Universal Transverse Mercator (UTM) Zone 20. The horizontal datum was NAD 83, GRS 1980 spheroid.

1.3 Coordination

An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final CCO meetings held for the U.S. Virgin Islands are shown in Table 1, "Initial and Final CCO Meetings."

TABLE 1 - INITIAL AND FINAL CCO MEETINGS

Island Name	Initial CCO Meeting	Final CCO Meeting
St. Croix	May 18, 1978	*
St. John	May 17, 1978	October 18, 1979
St. Thomas	May 17, 1978	October 17, 1979

*Data not available

For this FIS, the U.S. Virgin Islands was notified by FEMA in a letter dated September 9, 2005, that FEMA would be preparing a FIS and FIRM for the U.S. Virgin Islands. The letter stated that the effective FIRMs would be digitally converted to a format that conforms to FEMA's Digital FIRM (DFIRM) specifications.

A final CCO meeting was held on March 9, 2006, and was attended by representatives of the U.S. Virgin Islands and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Atlantic Ocean	Gut No. 4	Tributary to Gut No. 6
Caribbean Sea	Gut No. 5	Turpentine Run
Gut No. 1	Gut No. 6	Unnamed Tributary to Coakley Bay
Gut No. 2	Salt River	
Gut No. 3		

This FIS also incorporates the determinations of letters issued by FEMA resulting in map changes (Letter of Map Revision [LOMR], Letter of Map Revision - based on Fill [LOMR-F], and Letter of Map Amendment [LOMA], as shown in Table 3, "Letters of Map Change."

TABLE 3 - LETTERS OF MAP CHANGE

Island	Flooding Source(s)/Project Identifier	Effective Date	Type
St. Croix	Coakley Bay / Carden Beach Development north of East End Road	May 23, 1996	LOMR
St. Croix	Unnamed Tributary to Caribbean Sea / Estate Carlton Apartments	August 16, 1995	LOMR
St. Croix	Unnamed Tributary to Coakley Bay / Bay Solitude Section 107 Development	October 25, 2001	LOMR

Many unnamed streams were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the U.S. Virgin Islands.

2.2 Community Description

The U.S. Virgin Islands is comprised of 68 islands and cays located in the Caribbean Basin 1,075 miles east-southeast of Miami, and 50 miles east of Puerto Rico. Three miles separate the two smaller inhabited islands of St. Thomas (32 square miles) and St. John (28 square miles). Both are distinguished by a rugged mountainous topography with numerous sandy beaches and inlets along the shoreline. St. Croix (84 square miles), 40 miles south of St. Thomas, has rolling hills and a broad central plain between the relatively dry east end and the more lush, agricultural west end.

The Island of St. Croix is the largest of the Virgin Islands and is separated from the others by an ocean basin that drops abruptly to two miles in depth. The island is characterized by a mountainous area in the north flanked by a rolling plain to the south. Mt. Eagle, the highest peak, rises abruptly from sea level to 1,165 feet. The mountains are cut by many narrow, steep-sided valleys through which intermittent streams discharge in southerly and southeasterly courses across the plains. The eastern end of the island is mountainous with stream valleys not so sharply incised. The shorelines are characterized by mangrove swamps, salt ponds, and coralline sand beaches.

Volcanic rock outcrops in areas of high relief on St. Croix, and the extensive low-lying areas are underlain by folded sedimentary rock, including coralline limestone. In general, a steep, moderately permeable gravelly clay covers most of the island. Vegetation varies considerably, ranging from rain forests on the northern coast of the island to rocky slopes with cactus on the dry eastern coast of the island. Approximately 85% of the arable land in the Virgin Islands is located on St. Croix. Much of the agricultural land that was previously used for sugarcane is now being developed for heavy industry and residential areas, or is being maintained as non-irrigated pasture.

The Island of St. Thomas, the northwestern most of the three main U.S. Virgin Islands, is located on the geographical boundary between the Atlantic Ocean and the Caribbean Sea. As the second largest of the three main islands, it has an approximate area of 28 square miles.

Turpentine Run is the largest watershed on St. Thomas, with a drainage area of approximately 3.26 square miles. About half of the basin is urbanized, containing residential, commercial, and tourism-oriented structures. The basin is typical of the island's physical characteristics, featuring steep topography, thin clayey soils, nonporous rock base, and four short, steep drainage subbasins.

The Turpentine Run watershed contains three distinct types of cover. The uppermost section, located above the channelized stream, contains dense vegetation, including cacti. In the middle section, a 32-foot wide concrete channel has replaced the natural watercourse, and vegetation is absent in this segment of the basin. In the southernmost section, water movement is affected by the tides, and the stream banks are heavily vegetated with mangroves.

St. Thomas is characterized by an irregular coastline, numerous bays, and steep mountainous slopes. Over one-half of the island has slopes greater than 30-percent. The highest point on the island, Crown Mountain, has an elevation of 1,556 feet. Small earthen dams have been constructed along the guts on St. Thomas to impound surface runoff for agricultural use.

The soil of St. Thomas is highly permeable, but, once saturated, retains the water and rejects any excess. Vegetation on the island varies from secondary growth of deep-rooted vegetation typical of tropical forests, where the rainfall is heavy, to cacti in the dry eastern region.

St. John is characterized by an irregular coastline; numerous bays; steep, mountainous slopes; and small drainage areas. The island, of volcanic origin, consists of a main eastward-trending ridge with steep slopes to the north descending to the sea. The south side of the ridge has several prominent spur ridges extending southward.

Eighty percent of the land of St. John has slopes exceeding 30%. The highest peak, Bordeaux Mountain, rises 1,297 feet within a distance of 6,000 feet from the shoreline. There are no permanent streams or rivers on St. John. Intermittent streams, known locally as guts, discharge into the sea, forming narrow, nearly level alluvial fans and terraces along their course. The largest drainage basins on St. John are those of Reef Bay and Fish Bay Gut, each containing 1.77 square miles. Other basins are Coral Bay Gut, 1.69 square miles, and Guinea Gut, 0.72 square mile.

The soil on the slopes of the mountains of St. John generally is thin, but highly permeable; in the valleys, it is thicker and less permeable. The soil absorbs and temporarily holds most of the rain that falls on St. John. Data from St. Thomas and St. Croix indicate that the soil can hold at least two inches of rain.

Vegetation on St. John varies from secondary growth of deep-rooted tropical forest, where rainfall is highest, to cactus in the dry eastern region. The island has only a small area used for agricultural production.

Tourism is the most significant activity on the islands. More than 1 million tourists visit the Virgin Islands each year, with 75 percent of all visitors spending some time on the island of St. Thomas.

The climate in the Virgin Islands is marine tropical, characterized by steady easterly trade winds, occasional tropical storms and hurricanes, and a seasonal temperature range of 70 degrees Fahrenheit (°F) to 90°F. Orographic lifting of moist air is the common cause of rain over the islands. The average annual rainfall for St. Thomas is 43.7 inches (U.S. Department of Commerce, 1986). The rainfall patterns for St. Croix and St. John vary within short distances due to changes in terrain and elevation. For St. Croix, the average annual total rainfall at the higher elevations is between 50 and 55 inches and at the lower elevations between 30 and 35 inches. The average total rainfall for St. John in the higher elevations is also between 50 and 55 inches, but at the lower elevations, it is between 40 and 45 inches. Much of the rainfall throughout the islands is lost through evaporation.

The U.S. Census Bureau reported the official Census 2000 population count of 108,612 for the U.S. Virgin Islands.

2.3 Principal Flood Problems

Flooding on the islands is the result of tidal surges and heavy rainfalls produced by hurricanes and tropical storms. These storms usually occur between June and November. Flooding associated with storm water runoff causes the most local concern because it occurs most frequently.

Freshwater flooding on the islands is caused by intense rainfall for short durations, steep watershed areas, and insufficient carrying capacities of culverts.

Flooding in the vicinities of Cruz Bay and Coral Bay on the island of St. John, is characterized by overland sheetflow and ponding in the low areas. Flooding in these villages is aggravated by the fact that they are both located at the bottom of steep hills. Streets running down the hills convey storm runoff through the center of the villages. In addition, the guts in many areas are filled with debris or encroached upon artificial fills and structures causing local flooding problems.

On St. Thomas, the Frenchtown-Demarara area in Charlotte Amalie is a particularly flood-prone area. Flooding in the areas of Charlotte Amalie and Tutu is characterized by broad overland sheet flow. This is due to the fact that both areas are located on flat terrain at the base of steep watersheds. The USACE prepared a Flood Hazard Information report for the Demarara area (U.S. Department of the Army [USACE], 1977). Factors other than inadequate culvert capacity contribute to flooding in this area. Historically, large amounts of the runoff from the mountains north of Demarara were directed more to the east, flowing in broad overland sheet runoff to St. Thomas Harbor. Landfill, east of Demarara, had directed more flow toward the Demarara area. In addition, the conveyance of surface runoff through Demarara is reduced by the random and close spacing of the homes in the area.

The vicinity of the Cyril E. King (formerly Harry S Truman) Airport is also flood-prone, as shown in a special report entitled St. Thomas Airport Watershed Reconnaissance Report (U.S. Department of Agriculture, 1972). A U.S. Geological Survey (USGS) report demonstrated that flooding depths in the vicinity of the airport during the March 1, 1969, storm, which had a recurrence interval of 15 years, and the November 12, 1974, storm, which had a recurrence interval of 60 years, were very nearly the same, with 12 to 18 inches of water in the terminal building and on the runways (U.S. Department of Interior, 1977). It was further reported that in Charlotte Amalie the November 1974 flood, which had a recurrence interval of 60 years, was approximately 1 foot higher than the May 8, 1960, flood, which had a recurrence interval of 30 years. A thorough field reconnaissance of the study area accompanied these analyses.

Tidal flooding and winds associated with hurricanes are likely to be destructive. Previously, hurricanes have had a devastating impact, leaving citizens without homes or food, and crippling the economy. The islands lie outside the primary paths of severe tropical storms, except those that occur from August through mid-October. Because of the mild climate, many structures tend to be lightly constructed and are, therefore, likely to be completely destroyed by high winds. Large areas of waterfront property lie only a few feet above sea level. These areas include much of the commercial and industrial development. Damage to waterfront facilities and erosion of the shore caused by storm waves and tidal inundation can be heavy.

Tidal flooding on St. John is significant. Several locations on small bays around St. John are subject to inundation. On the south coast, there is a greater probability of landfalling storms than on the north coast because the prevailing storm direction is from the east and south east. The bathymetry is steep around most of St. John. The effect of this is to limit surge levels, which are highest in shallow water, and to expose the beach to large waves.

A Flood Plain Information report was prepared by the USACE (USACE, 1975). Information on the tidal flood situation, past tidal flooding, and future tidal flooding for the U.S. Virgin Islands is presented in that report. The largest recorded floods on the island occurred in 1867, 1916, 1924, 1953, 1960 (30-year frequency), 1969 (15-year frequency), 1970, 1974 (60-year frequency), and 1977. The 1977 flood is also the most recent flood of record within that report.

The November 11 through 13, 1974, flood inundated large areas of the Island of St. Croix in and around Christiansted, causing landslides and major damage to buildings, roads, and utility lines. The President declared St. Croix a major disaster area.

Heavy rains over Puerto Rico and the U.S. Virgin Islands during the week of November 10-15, 2003, led to widespread flash flooding, and numerous mud, land and rock slides. The U.S. Virgin Islands were also declared a federal disaster area, with damages estimates around 25-30 million.

In the last twenty years four major hurricanes have struck the islands: Hurricanes Hugo, Marilyn, Bertha, and Lenny.

Hurricane Hugo - September 17–22, 1989

Hurricane Hugo was a destructive Category 5 Atlantic hurricane that struck Puerto Rico, St. Croix, and South Carolina during the 1989 Atlantic hurricane season, killing at least 70 people. Hugo caused severe coastal flooding in the U.S. Virgin Islands due to storm surges of as much as 11 ft and riverine flooding from more than 10 in. of rain in a 2-day period. Up to 15 inches of rain fell in the U.S. Virgin Islands, and St. Croix was hardest hit. Governor Charles Turnbull declared a state of emergency in the Virgin Islands because of the weeklong tempest.

Hurricane Marilyn – September 12–22, 1995

Hurricane Marilyn devastated portions of the U.S. Virgin Islands when it struck with Category 2 to near Category 3 intensity. Marilyn continued moving northwestward over the northeastern Caribbean Sea. It hit the U.S. Virgin Islands during the afternoon and night of the 15th as a strengthening Category 2 - nearly Category 3 - hurricane. The Hurricane Hunters reported hail, an unusual occurrence for tropical cyclones. They noted an eye of 20 nautical miles (nm) in diameter. The strongest part of the hurricane, the eyewall, to the east and northeast of the center, passed over St. Thomas. Maximum one-minute surface winds at that time were close to 95 knots. St. Thomas was hit by the hurricane's eastern and northeastern eyewall. In addition, the hurricane strengthened as it approached and passed St. Thomas. An uncommissioned FAA Automated Surface Observing System (ASOS) at the St. Thomas King Airport provided the only continuous "official" wind record of the event in the U.S. Virgin Islands. Its maximum two-minute wind was 90 knots at 0352 and again at 0353 UTC on the 16th. The ASOS measured a gust to 112 knots at 0408 UTC. Based on the ASOS data, the estimated maximum one-minute wind speed (for open exposure at 10 meters elevation) at that time is 95 knots. The ASOS measured a minimum pressure of 956.7 mb. The storm surge in the U.S. Virgin islands reached 6 to 7 feet, with an isolated storm tide of 11.7 feet reported on St. Croix. Rainfall totals reached about 10 inches in St. Croix and St. Thomas. "Marilyn was directly responsible for 8 deaths:" 5 in St. Thomas, 1 in St. John, 1 in St. Croix and 1 in Culebra (Puerto Rico). Marilyn caused severe damage to the U.S. Virgin Islands, in particular to St. Thomas. An estimated 80 percent of the homes and businesses on St. Thomas were destroyed and at least 10,000 people were left homeless. According to FEMA, 30 percent of the homes on St. John were destroyed and 60 percent were roofless. The American Insurance Services Group estimated insured losses for the U.S. Virgin Islands and Puerto Rico at $875 million. Because the overall loss is often estimated to be up to about double the insured loss, the total

U.S. loss is estimated at $1.5 billion. The U.S. Virgin Islands Bureau of Economic Research estimated the economic loss at $3 billion. FEMA placed the cost for their programs at $1 billion in the Virgin Islands and $50 million in Puerto Rico. The FEMA totals include losses not traditionally described by the NHC as "damage," such as FEMA's cost to set up field offices, inspector's salaries, disaster unemployment compensation, and crisis counseling.

Hurricane Bertha - July 5–14, 1996

Meteorological observations are incomplete from the Leeward and Virgin Islands, but because the circular eyewall was 20 - 30 nm across, it is believed that hurricane conditions with sustained wind speeds to 75 knots, could have occurred on Antigua, Barbuda, Nevis, St. Eustatius, St. Bathelemy, Anguilla, St. Martin, and St. Thomas. Experience with Hurricane Marilyn in 1995 suggests that even higher sustained winds can occur over mountainous terrain as is found on many of these islands. The U.S. Virgin Islands, along with North Carolina, were declared federal disaster areas. Surveys indicated that Bertha damaged almost 2,500 homes on St. Thomas and St. John.

Hurricane Lenny - November 13–23, 1999

Rainfall totals averaged 3 to 4 inches across the U.S. and British Virgin Islands. Hamilton Airport in St. Croix measured 8.05 inches of rain, resulting in widespread flooding around the island inundating many homes. Frederiksted in St. Croix was inundated by an estimated 15 to 20 foot storm surge. The maximum recorded storm tide was 2.9 feet at the NOAA National Ocean Service (NOS) gage in Lime Tree Bay on St. Croix. NOAA NOS gages recorded 1.8 feet on St. Thomas and in Puerto Rico (San Juan). There was also considerable coastal erosion reported on St. Croix. Hurricane Lenny was an unusual storm because of its extended west-to-east motion through the Caribbean, unprecedented in the 113-year Atlantic basin tropical cyclone record. Insured losses of 165 million U.S. dollars have been reported from Puerto Rico and the U.S. Virgin Islands. The total U.S. damages from Lenny is estimated at 330 million dollars.

2.4 Flood Protection Measures

There are no existing, authorized, or proposed Federal flood damage protection measures against hurricane tides on the islands.

The numerous small earth dams which have been constructed across guts on St. Croix, to impound surface runoff from storms, are primarily for livestock watering in less-developed areas. Most of these dams have no outlet control and are no longer being used.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail on the islands, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding sources studied in detail affecting the community.

For each of the three islands that have a previously printed FIS report, the hydrologic analyses described in those reports have been compiled and are summarized below.

A detailed shallow flooding analysis was made for the areas of Charlotte Amalie and Tutu. Because sufficient gage data did not exist for the streams on the island for flood-frequency analyses, the first step in the hydrologic study was to collect and appraise all available data concerning flooding in the areas studied by detailed methods. In deciding on an appropriate methodology to use for the hydrologic analyses, the results and methodologies used by others for various studies were reviewed and compared. As most of the information available was on the Frenchtown Gut on the Island of St. Thomas, this was chosen as the test basin for comparisons.

The 1-percent annual chance discharge was developed for the Frenchtown drainage basin on the Island of St. Thomas and the eight guts on the Island of St. Croix using a U.S. Soil Conservation Service (SCS) method for small watershed (U.S. Department of Agriculture, 1973). The 24-hour rainfall was obtained from U.S. Weather Bureau Technical Paper No. 42 (U.S. Department of Commerce, 1961). A Type II storm distribution was adopted for the analysis, as recommended by the U.S. Soil Conservation Service for the U.S. Virgin Islands (U.S. Department of Agriculture, 1973).

In utilizing the SCS method, careful consideration was given to the curve number selected for each drainage basin. The curve number parameter reflects the ground-cover type and retention characteristics for the watershed. A weighted average curve number was used, based on relative surface areas of the soil groups and land uses in the basin.

These basin parameters, along with the slope and drainage area, yielded a peak 1-percent annual chance discharge for the Frenchtown basin. This discharge compared well with discharges developed in previous studies of Frenchtown by the USACE and by Black, Crow, and Eidsness, Inc. (USACE, 1977 and Black, Crow, and Eidsness, Inc., Engineers, U.S. Virgin Islands Culvert Computations, A Supplement to the Virgin Islands Water Resources Map). Discharges were developed for the other watersheds in Charlotte Amalie and Tutu using a discharge-drainage area relationship for the 1-percent annual chance discharge in the Frenchtown area.

In the 1993 revision to the FIS for the island of St. Thomas, the 10-, 2-, 1-, and 0.2-percent annual chance recurrence interval inflow to the floodplain was developed using a rainfall-frequency relationship and unit hydrographs. The design rainfall data for the Turpentine Run watershed was obtained from U.S. Weather Service Technical Paper No. 42 (U.S. Department of Commerce, 1961). The standard project 6-hour precipitation was computed by taking 50 percent of the probable maximum 6-hour precipitation, as shown in Technical Paper No. 42. Rainfall distribution was supplied by SCS Technical Release No. 20, Rainfall Table No. 2 (U.S. Department of Agriculture, 1983). Discharges were computed using the USACE HEC-1 computer model with the SCS lag equation (USACE, 1970 and U.S. Department of Agriculture, 1983).

The runoff rates per unit area for the streams on the island of St. Croix are high. This is due to the high moisture demand of the soils on St. Croix. When dry, the soil is highly permeable. When saturated, the soil becomes much less permeable, but still retains large quantities of water. The SCS estimates that water will infiltrate dry soil at a rate of two inches per hour with a storage capacity of three inches per hour per foot of thickness. Though there are only limited discharge records for the Virgin Islands, a runoff yield of 2,160 cubic feet per second (cfs) per square mile has been recorded on Turpentine Run at Mt. Zion on St. Thomas. (U.S. Department of the Interior, 1973). Greater storms could reasonably be expected to produce greater runoff rates per unit area.

A summary of the drainage area-peak discharge relationships for the Turpentine Run and the guts is shown in Table 4, "Summary of Discharges."

TABLE 4 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (acres)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
GUT NO. 1					
At mouth	275	920	1,420	1,670	2,400
GUT NO. 2					
At mouth	360	1,030	1,430	1,850	2,260
GUT NO. 3					
At mouth	525	1,240	2,090	2,400	3,450
GUT NO. 4					
At mouth	538	920	1,620	1,860	2,330
GUT NO. 5					
At mouth	2,406	1,770	2,780	3,890	6,000
GUT NO. 6					
At mouth	3,200	2,790	4,320	5,890	8,500
TRIBUTARY TO GUT NO. 1					
At mouth	1,472	1,290	1,680	2,615	3,600
TURPENTINE RUN					
At confluence of Caribbean Sea (Mangrove Lagoon)	2,086	5,581	8,022	9,178	17,311
At headwaters	1,280	3,630	5,212	5,960	11,230
SALT RIVER					
At mouth	2,886	3,300	5,880	7,400	11,000

For areas subject to tidal inundation, the 10-, 2-, 1-, and 0.2-percent annual chance flood elevations and delineations were taken directly from a detail storm surge study performed by Dewberry and documented in detail in a report titled "U.S. Virgin Islands Storm Surge Study" (Dewberry, 2005).

The Advanced Circulation model for Coastal Ocean Hydrodynamics (ADCIRC), (Luettich, 1995), developed by the USACE was selected to develop the stillwater elevations or storm surge from the US Virgin Islands. ADCIRC uses an unstructured grid and is a finite-element long wave model. ADCIRC has the capability to simulate tidal circulation and storm surge propagation over large areas and is able to provide highly detailed resolution along the shorelines and areas of interest. It solves three dimensional equations of motion including tidal potential, Coriolis, and nonlinear terms of the governing equations. The model is formulated from the depth averaged shallow water equations for conservation of mass and momentum which results in the generalized wave continuity equation.

The Empirical Simulation Technique (EST), also developed by the USACE, was used to develop the stillwater frequency curves for the 10-, 2-, 1-, and 0.2-percent annual chance stillwater elevations.

The NOAA bathymetric survey dated 1998, aerial photogrammetric topographic data dated 1994 and aerial photographs, both obtained by the USACE Jacksonville District, were used to refine, around the U.S. Virgin Islands, an already existent grid generated by USACE for the Caribbean area.

In order to model storm surge using ADCIRC, wind and pressure fields are required for input. A model called the Planetary Boundary Layer model (PBL), developed by V.J. Cardone (Cardone, 1992), uses the statistics from a hurricane or storm to simulate that storm and develop wind and pressure fields. The PBL model simulates hurricane-induced wind and pressure fields by applying the vertically averaged equations of motion. Oceanweather Inc., was contracted to run the PBL model with the selected storms and provide wind and pressure fields for each of the 12 storms selected. The 12 selected storms represent the storms that passed the closest and had the most significant impact to the U.S. Virgin Islands over the past 100 years. The 12 selected storms are shown below.

Name of Storm	**HURDAT ID#**	**Begin Date**	**End Date**
Unnamed Storm of 1916	219	21-Aug	25-Aug
Unnamed Storm of 1924	262	16-Aug	28-Aug
Unnamed Storm 2 of 1924	263	26-Aug	6-Sep
Unnamed Storm of 1928	292	6-Sep	20-Sep
Unnamed Storm of 1932	315	25-Sep	3-Oct
Hurricane Betsy in 1956	558	9-Aug	20-Aug
Hurricane Donna in 1960	597	29-Aug	14-Sep
Hurricane Klaus in 1984	827	5-Nov	13-Nov
Hurricane Hugo in 1989	872	10-Sep	25-Sep
Hurricane Marilyn in 1995	932	12-Sep	1-Oct
Hurricane Bertha in 1996	940	5-Jul	17-Jul
Hurricane Lenny in 1999	985	13-Nov	23-Nov

The storm statistics were obtained from the Hurricane Database (HURDAT) kept by NOAA. Tidal cycles are used in the model to calibrate the model and fine tune the grid. The tidal constituent database that covers the east coast was obtained from a digital tidal constituent database (Le Provost, 1992). Hurricanes Marilyn, Bertha, and Lenny were used to verify that the model was reproducing accurate results by comparing surge levels from the model to high water marks and water level records from NOAA tidal gages.

The EST model was used for the stage-frequency analysis. The EST generates a large population of life-cycle databases that are processed to compute mean value frequencies. Input vectors describe the characteristics of each storm such as central pressure and maximum winds. The input response vector is the maximum surge elevation recorded at each station for each storm simulated with ADCIRC. The output is a stage-frequency curve for each station in the study area. The EST model performs many simulations at each station. Of all EST simulations for a single station, the mean value is selected for each return period as the final resultant value.

Stillwater elevations for the Islands of St. Croix, St. John and St. Thomas, obtained using the ADCIRC and EST models are summarized in Table 5, "Summary of Coastal Stillwater Elevations." Locations of the surge stations for the three islands are shown in Figures 1-3. Please note that the surge stations identification label does not coincide with the transect identification labels.

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS

	ELEVATION (feet local datum)			
FLOODING SOURCE AND LOCATION	10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
	ISLAND OF ST. CROIX			
Caribbean Sea				
C1 - Sandy Point	2.9	4.5	5.1	6.7
C2 - Whim Estate	3.3	5.7	6.5	8.8
C3 - Hesselberg Estate	2.7	4.3	5.0	6.6
C4 - Frederiksted	2.9	4.0	4.5	5.6
C5 - Fort Frederiksted	2.8	4.3	4.9	6.4
C6 - Shoreline of Prosperity Estate	2.9	4.9	5.5	7.4
C7 - Sprat Hole	2.7	3.7	4.1	5.1
C8 - North of Butler Bay/Northside	2.7	3.9	4.3	5.5
C9 - Hams Bay	3.0	4.1	4.5	5.6
C10 - Maroon Hole	2.9	4.0	4.4	5.5
C11 - Annaly Bay	3.0	4.2	4.6	5.8
C12 - Wills Bay Estate	2.7	3.8	4.3	5.4
C13 - Carambola Beach	2.6	3.7	4.2	5.4
C14 - Cane Bay Beach	2.9	3.9	4.3	5.3
C15 - La Vallee Estate	2.3	3.2	3.6	4.5
C16 - Rust Up Twist Estate	2.7	3.6	4.0	4.9
C17 - Baron Bluff	2.9	3.9	4.2	5.2
C18 - East side of the mouth of Salt River Bay	2.9	4.0	4.5	5.6
C19 - Sugar Bay	4.4	6.0	6.5	8.0
C20 - Salt River Bay	3.9	5.1	5.5	6.7
C21 - Salt River Beach	2.6	3.4	3.8	4.6

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS - continued

FLOODING SOURCE AND LOCATION	ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ISLAND OF ST. CROIX – continued				
Caribbean Sea (continued)				
C22 - At eastern Peninsula of Judith Fancy	2.9	3.9	4.3	5.3
C23 - Shoreline at Lagrande Princesse Estate	3.8	5.2	5.8	7.2
C24 - West side of Canegarden Bay	3.9	5.9	6.8	8.8
C25 - West end of Christiansted Harbor	4.6	6.3	7.0	8.7
C26 - Near Seaplane Shuttle Ramp in Christiansted Harbor	5.0	7.3	8.1	10.3
C27 – Gallows Bay	4.4	6.4	7.3	9.3
C28 – Near mouth of Altona Lagoon	3.5	4.8	5.3	6.6
C29 – West side of Altona Lagoon	5.2	7.5	8.6	10.9
C30 – East side of Altona Lagoon	5.9	9.4	10.5	13.9
C31 – Beauregard Bay	3.4	4.7	5.2	6.5
C32 – Punnett Bay/Punnett Point	2.6	3.8	4.5	5.7
C33 – Chenay Bay	3.7	5.5	6.3	8.1
C34 - Coakley Bay	3.9	5.5	6.2	7.8
C35 - Pow Point	3.7	5.2	6.0	7.5
C36 - Yellowcliff Bay	3.8	5.5	6.3	8.0
C37 - Tague Bay	4.9	6.8	7.6	9.5
C38 - West side of Romney Point	3.9	5.7	6.6	8.4
C39 - Romney Point/Knight Bay	4.0	5.8	6.7	8.5
C40 - Cottongarden Point	3.7	6.1	7.1	9.5
C41 - Et Stykke Land Estate	4.0	5.7	6.4	8.1
C42 - Point Cudejarre/Isaac's Bay Beach	3.1	4.5	5.2	6.6
C43 - Jack Bay	2.7	3.6	4.0	4.9
C44 - Grapetree Bay	3.5	4.8	5.2	6.5
C45 - Turner Hole	4.4	6.3	7.0	8.9
C46 - Rod Bay	3.3	4.5	5.0	6.2
C47 - Robin Bay	4.3	6.1	6.6	8.3
C48 - Mount Fancy Estate	3.0	4.2	4.6	5.8
C49 - Great Pond Bay	4.0	5.6	6.3	7.9
C50 - In Great Pond	5.8	8.6	9.6	12.3
C51 - Milord Point	3.1	4.3	4.7	5.9
C52 - Shoreline at Little Princess Estate	3.8	5.2	5.9	7.3
C53 - Surlaine Point	3.1	4.2	4.7	5.8
C54 - Manchenil Bay	2.7	3.6	4.1	5.0
C55 - Retreat Estate (near Vagthus Point)	3.8	5.5	6.2	7.9
C56 - Canegarden Bay	3.2	4.9	5.6	7.3
C57 - Fareham Bay	5.0	7.7	8.8	11.5
C58 - Hess Channel	3.1	5.1	5.9	7.9
C59 - Between 2 Piers in Container Port	3.8	5.6	6.4	8.2
C60 - In Container Port	3.5	5.0	5.5	7.0
C61 - Container Point between Harvey Channel and western pier	4.5	6.6	7.4	9.5
C62 - In Harvey Channel in Hess Oil Refinery	5.4	8.6	9.9	13.1

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS - continued

FLOODING SOURCE AND LOCATION	ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ISLAND OF ST. CROIX – continued				
Caribbean Sea (continued)				
C63 - West of mouth of Harvey Channel	4.0	6.0	6.8	8.8
C64 - West shoreline of Kraesses Lagune Estate	2.9	4.5	5.2	6.8
C65 - Bethlehem Middle Works Estate	3.6	5.3	6.0	7.7
C66 - Mannings Bay (Estate)	4.2	6.9	8.0	10.7
C67 - Negro Bay (Coopers) Estate	4.4	7.0	8.1	10.7
C68 - Bettys Hope Estate	4.5	7.3	8.4	11.2
C69 - Cane Estate	3.6	5.6	6.3	8.3
C70 - Logan Point Bay	3.5	4.7	5.2	6.4
C71 - Hope and Carlton Land Estate	3.8	6.4	7.5	10.1
C72 - Camporico Estate	4.2	7.2	8.4	11.4
C73 - South shore of Whim Estate	4.7	8.5	9.9	13.6
ISLAND OF ST. JOHN				
Pillsbury Sound				
J46 - Chocolate Hole	2.7	4.1	4.7	6.1
J47 - Great Cruz Bay	2.3	3.3	3.8	4.8
J48 - Turner Bay	2.6	3.9	4.5	5.8
J49 - Cruz Bay	1.9	2.8	3.1	4.0
J1 - Salomon Bay (near Lind Point)	2.0	2.9	3.4	4.3
J2 - Caneel Bay	1.9	2.8	3.2	4.1
Atlantic Ocean				
J3 - Hawksnest Point	3.3	6.2	7.3	10.2
J4 - Hawksnest Bay	3.5	6.2	7.2	9.9
J5 - Trunk Bay	3.7	6.3	7.4	10.0
J6 - Cinnamon Bay	3.6	6.2	7.1	9.6
J7 - Maho Bay	3.6	6.1	7.1	9.6
J8 - Francis Bay	3.1	5.2	6.0	9.9
J9 - Mary Point (near Fungi Passage)	3.0	5.0	5.9	7.9
J10 - Anna Point	2.9	5.0	5.8	7.9
J11 - Mary Creek	3.3	5.7	6.7	9.1
J12 - Waterlemon Bay	3.1	5.1	6.0	8.0
J13 - Threadneedle Point	2.7	4.8	5.6	7.7
J14 - Brown Bay	2.8	4.7	5.5	7.4
J15 - Mount Pleasant and Retreat Estate	2.6	4.6	5.3	7.3
J16 - Haulover Bay	2.8	4.5	5.2	6.9
J17 - Newfound Bay	2.6	4.1	4.8	6.3

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS - continued

FLOODING SOURCE AND LOCATION	ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ISLAND OF ST. JOHN - continued				
Atlantic Ocean (continued)				
J18 - East End (between Newfound Bay and East End Point)	2.3	3.1	3.5	4.3
Caribbean Sea				
J19 - Privateer Point	2.0	3.0	3.4	4.4
J20 - Red Point	2.1	3.2	3.8	4.9
J21 - Hansen Bay	2.1	3.3	3.8	5.0
J22 - Limetree Cove	2.3	3.4	3.9	5.0
J23 - Round Bay near Turner Point	2.3	3.6	4.1	5.4
J24 - Water Creek	2.4	3.7	4.3	5.6
J25 - Princess Bay	2.6	4.0	4.6	6.0
J26 - Borck Creek	2.9	4.3	5.0	6.4
J27 - Fortsberg Estate (east of Harbor Point)	2.7	4.0	4.7	6.0
J28 - Coral Harbor	3.5	5.2	6.0	7.7
J29 - Sanders Bay	3.2	4.7	5.4	6.9
J30 - Johnson Bay	2.5	3.8	4.4	5.7
J31 - Sabbat Point	2.4	3.8	4.4	5.8
J32 - Nanny Point	2.4	3.7	4.3	5.6
J33 - Parcel of Concordia near Ram Head	2.1	3.3	3.9	5.1
J34 - Saltpond Bay	2.0	3.1	3.5	4.6
J35 - Kiddel Bay	2.1	3.2	3.8	4.9
J36 - Cabritte Horn Point/Grootpan Bay	2.1	3.4	3.9	5.2
J37 - Great Lameshur Bay	2.4	3.7	4.3	5.6
J38 - Little Lameshur Bay	2.3	3.6	4.2	5.5
J39 - White Cliffs near White Point	2.2	3.4	3.9	5.1
J40 - Genti Bay	2.6	4.1	4.8	6.3
J41 - Fish Bay Estate	2.4	3.7	4.2	5.5
J42 - Fish Bay	3.2	4.8	5.4	7.0
J43 - Rendevous Bay (Klein Bay near Dittlif Point)	2.2	3.2	3.6	4.6
J44 - Rendezvous Bay/Boatman Point	2.5	3.7	4.2	5.4
J45 - Bovocoap Point	2.2	3.3	3.8	4.9
ISLAND OF ST. THOMAS				
Atlantic Ocean				
T1 - Sandy Bay	2.4	3.5	3.9	4.2
T2 - Botany Bay	2.6	4.4	2.5	7.0
T3 - Bordeaux Point	2.6	4.3	5.0	6.7

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS - continued

FLOODING SOURCE AND LOCATION	ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ISLAND OF ST. THOMAS - continued				
Atlantic Ocean (continued)				
T4 - Between Bordeaux Bay and Stumpy Bay	2.6	4.5	5.3	7.2
T5 - Hope Estate (near Stumpy Point)	2.6	4.5	5.3	7.2
T6 - Santa Maria Bay	2.7	4.7	5.5	7.5
T7 - Caret Bay	2.4	4.2	5.0	6.8
T8 - Mail Bay (near Kastel Point)	2.4	4.3	5.1	7.0
T9 - Ruy Point	2.8	5.1	6.1	8.4
T10 - Hull Bay	2.9	5.3	6.3	8.7
T11 - Hull Estate (near Tropaco Point)	2.8	5.1	6.0	6.7
T12 - Reseau Bay	3.1	5.5	6.6	9.0
T13 - Magens Bay (Zufriedenheit Estate)	3.3	6.0	7.0	9.7
T14 - Magens Bay (Megans Bay Estate)	2.9	5.2	6.1	8.4
T15 - Magens Bay near Picara Point	2.7	4.8	5.6	7.7
T16 - Peterborg Estate between Lovenlund Bay and Picara Point	2.8	5.1	5.9	8.1
T17 – Peterborg Estate (near Lovenlund Bay)	3.1	5.2	6.0	8.1
T18 – Lovenlund Estate	3.2	5.4	6.3	8.5
T19 – Mandal Bay	3.4	5.7	6.8	9.1
Pillsbury Sound				
T20 - Tutu Bay	3.5	5.9	7.0	9.4
T21 - Sunsi Bay	3.5	5.6	6.5	8.6
T22 - Coki Bay	3.0	4.9	5.7	7.6
T23 - Water Bay	3.5	5.4	6.2	8.1
T24 - Smith Bay	3.3	5.3	6.2	8.2
T25 - Redhook Point	3.1	4.6	5.4	6.9
T26 - Vessup Bay	4.6	6.5	7.3	9.2
T27 - Muller Bay	3.4	5.2	6.0	7.8
T28 - Cabrita Point	2.6	3.8	4.3	5.5
T29 - Great Bay	3.2	4.7	5.3	6.8
T30 - Water Point	3.0	4.2	4.7	5.9
T31 - Cowpet Bay	2.9	4.1	4.7	5.9
Caribbean Sea				
T32 - Beverhout Point	2.9	4.2	4.7	6.0
T33 - Nazareth Bay	3.1	4.5	5.0	6.4
T34 - Benner Bay	4.2	6.1	6.9	8.8
T35 - Mangrove Lagoon (Nadir Estate)	4.8	6.7	7.6	9.5
T36 - Bovoni Cay	4.2	6.0	6.7	8.5

TABLE 5 - SUMMARY OF COASTAL STILLWATER ELEVATIONS - continued

FLOODING SOURCE AND LOCATION	ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ISLAND OF ST. THOMAS - continued				
Caribbean Sea (continued)				
T37 - Mangrove Lagoon (inner)	6.4	9.3	10.5	13.4
T38 - Mangrove Lagoon	5.1	6.9	7.7	9.5
T39 - North side of Cas Cay	3.1	4.4	4.9	6.2
T40 - East of Patrick Point	3.1	4.1	5.0	6.3
T41 - West of Patrick Point	3.1	4.6	5.2	6.7
T42 - Long Point	2.2	3.3	3.8	4.9
T43 - Between Bovoni Bay and Stalley Bay	2.6	3.9	4.4	5.7
T44 - Bolongo Bay	3.2	4.8	5.4	7.0
T45 - Frenchman Bay	2.1	3.0	3.4	4.3
T46 - Morningstar Bay	2.8	4.2	4.6	5.9
T47 - Pacquereau Bay	2.9	4.3	4.8	6.2
T48 - Long Bay	3.1	4.5	5.1	6.5
T49 - St. Thomas Harbor east of Ferry Terminal	3.6	5.3	6.0	7.7
T50 - North of Careening Cove	3.6	5.3	5.9	7.6
T51 - Northeast of Cowell Point	3.2	4.8	5.4	7.0
T52 - East Gregerie Channel (Hassel Island)	2.9	4.3	4.8	6.2
T53 - Cargo Point Area	2.9	4.1	4.5	5.7
T54 - Banana Point	1.8	3.0	3.4	4.6
T55 - North of Sprat Point	3.3	4.9	5.5	7.1
T56 - Sprat Bay	3.4	4.9	5.5	7.0
T57 - Between Limestone Bay and Flamingo Point	3.3	4.9	5.5	7.1
T58 - Flamingo Point/Flamingo Bay	2.0	3.1	3.5	4.6
T59 - Druif Bay	2.2	3.3	3.7	4.8
T60 - Elephant Bay	2.1	3.3	3.7	4.9
T61 - Regis Point	2.0	3.3	3.5	4.6
T62 - Inner Krum Bay	2.7	4.1	4.7	6.1
T63 - Krum Bay	2.6	4.0	4.5	5.9
T64 - Mosquito Point	2.1	3.3	3.7	4.9
T65- Lindbergh Bay	2.8	4.3	4.8	6.3
T66 - South shore at Cyril E. King Airport	2.7	4.0	4.6	5.9
T67- Brewers Bay/University of the Virgin Islands	2.3	3.6	4.1	5.4
T68- Black Point	2.5	3.8	4.2	5.5
T69 - Persevernce Bay	3.0	4.3	4.9	6.2
T70 - Runnel Bay	2.9	4.1	4.7	5.9
T71 - Fortuna Bay/Krabbepan Point	3.0	4.2	4.7	5.9
T72 - Barents Bay	2.5	3.6	4.0	5.1

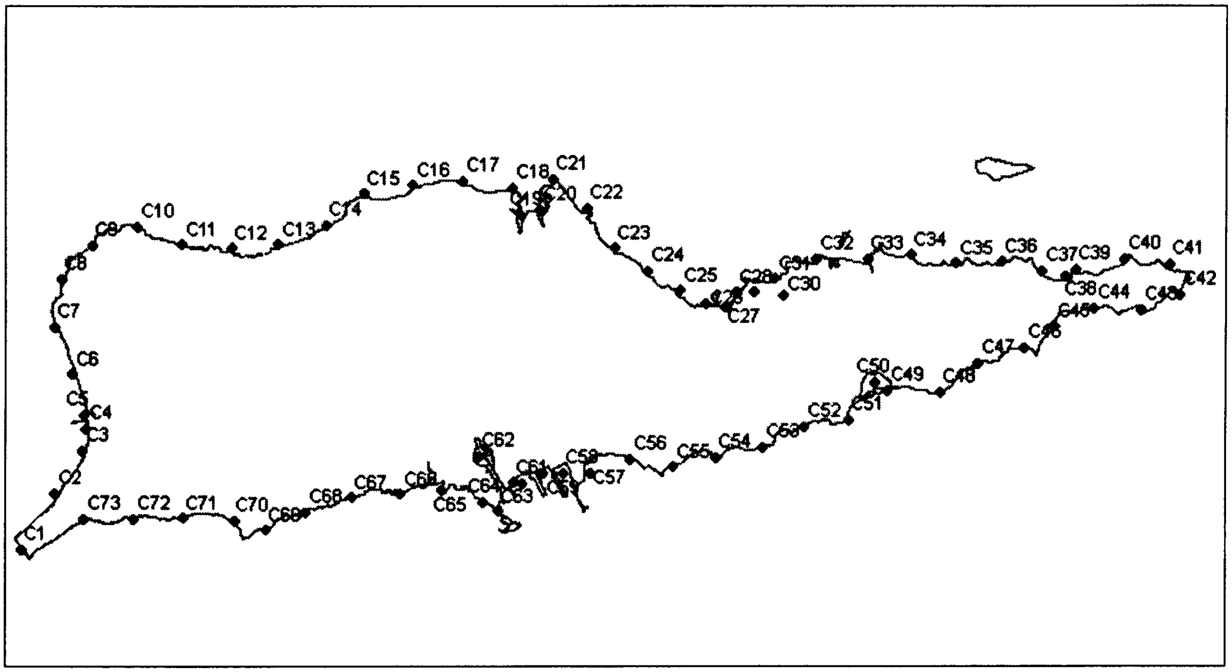


Figure 1 - St. Croix: location of ADCIRC stations

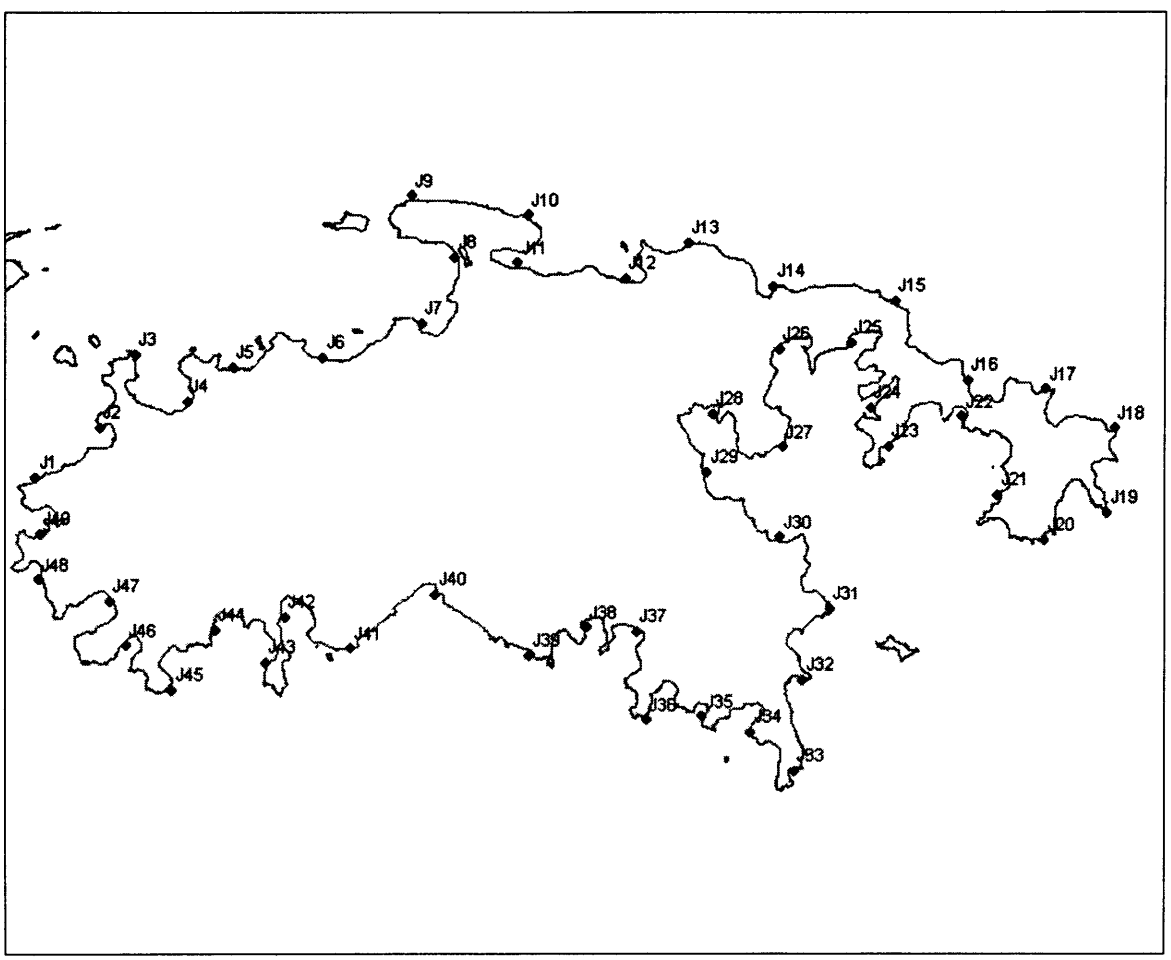


Figure 2 - St. John: location of ADCIRC stations

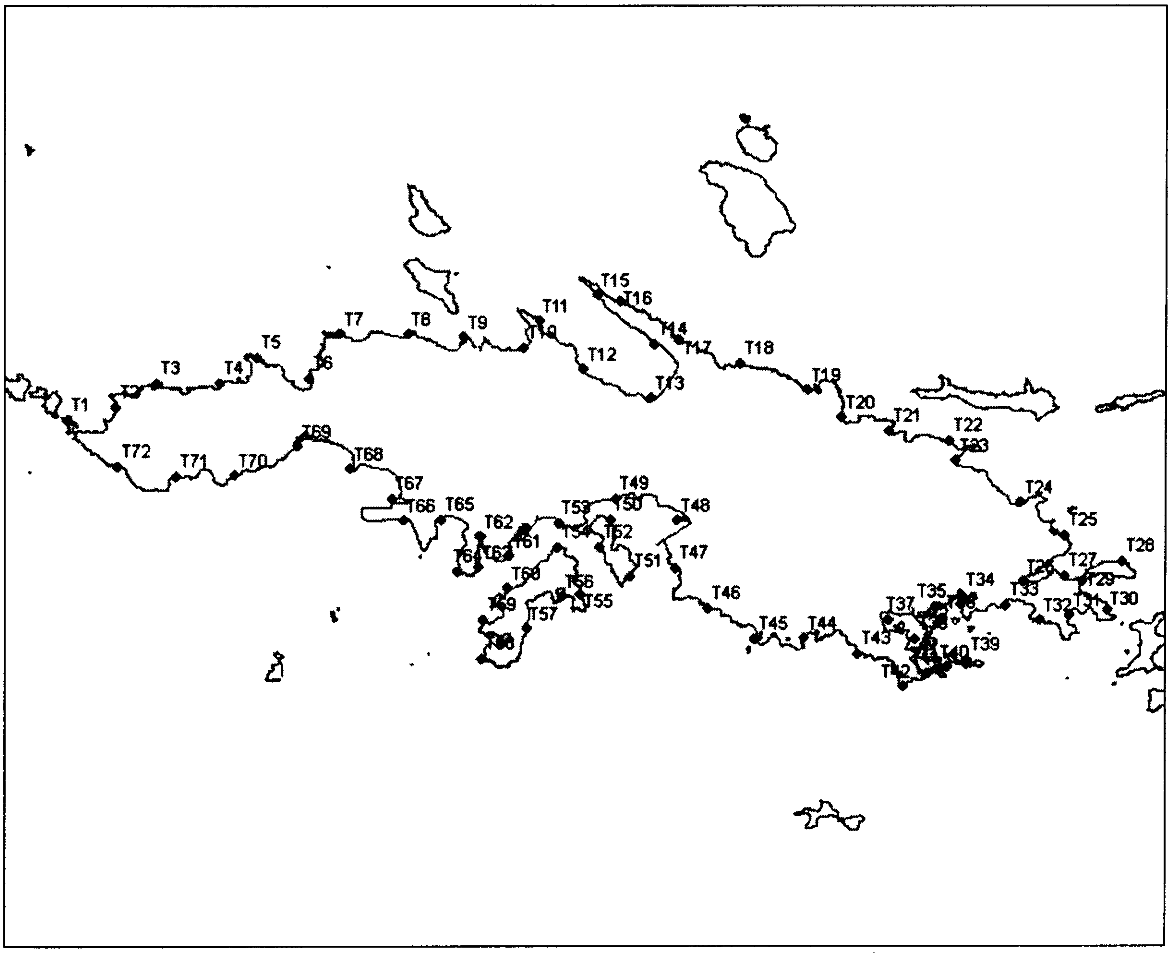


Figure 3 - St. Thomas: location of ADCIRC stations

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Cross sections for the flooding sources studied by detailed methods were obtained from field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2).

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

For each community that has a previously printed FIS report, the hydraulic analyses described in those reports have been compiled and are summarized below.

In the 1980 FIS for the Island of St. Croix, water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, 1984 and USACE, 1974). Cross sections for backwater analyses of the guts were taken from field survey data obtained by F.X. Ball and Associates. The cross sections were located at close intervals above and below bridges and culverts in order to compute the significant backwater effects of these structures.

Roughness factors (Manning's "n"), for computations were assigned on the basis of field inspection. The values for the channel ranged from 0.16 to 0.42; the overbank values ranged from 0.35 to 0.85.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1). The mean annual tide was assumed to coincide with the 10-, 2-, 1-, and the 0.2-percent annual chance peak discharges.

In the original 1980 FIS for the Island of St. Thomas, a detailed shallow flooding analysis was made for the areas in and near Charlotte Amalie and in the area of Tutu. Areas in Charlotte Amalie located north of Main Street in the immediate vicinity of the drainage guts were found not to be subject to shallow flooding, but flooding directly related to the channel flood elevations. In these areas, the 1-percent annual chance flood elevations were computed by approximate methods.

Cross-section data and slopes at each shallow flooding location were developed from existing detailed topographic mapping (Black, Crow, and Eidsness, Inc., Engineers, 1976). Roughness coefficients were then developed by calibration, using existing flood contour maps prepared by the USGS for the previous floods in Charlotte Amalie on March 1, 1969, and November 12, 1974 (U.S. Department of the Interior, 1977). Using this information, the average depth at each cross section was computed. It was determined that 100-year shallow flooding depths averaging 2 feet could be expected in the Cyril E. King Airport area, and depths of 3 feet could be expected in the Charlotte Amalie area. This method of analysis was used in conjunction with historical data, flooding reports, and reports by local residents and officials.

In the original 1980 FIS for the Island of St. Thomas, water-surface elevations were determined using methods of analysis chosen from Open-Channel Hydraulics (Chow, 1959). Turbulent flow conditions were assumed because the expected depths of flow and surface characteristics are likely to produce persisting eddies. In the 1993 revision for the Island of St. Thomas, water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, 1984). The mean high tide of 1.1 feet mean sea level (msl) at Mangrove Lagoon was used as the starting water-surface elevation for Turpentine Run. Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

In the 1993 FIS revision of the Island of St. Thomas, the channel roughness coefficients ranged from 0.065 to 0.125 for the left overbank, 0.040 to 0.125 for the right overbank, and 0.018 to 0.125 for the channel. There is a small levee between station 34+20 and 35+20 that constricts the flow into the concrete channel. For the concrete channel, roughness values of 0.105, 0.065, and 0.050 were used for the left overbank, right overbank, and channel areas, respectively.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

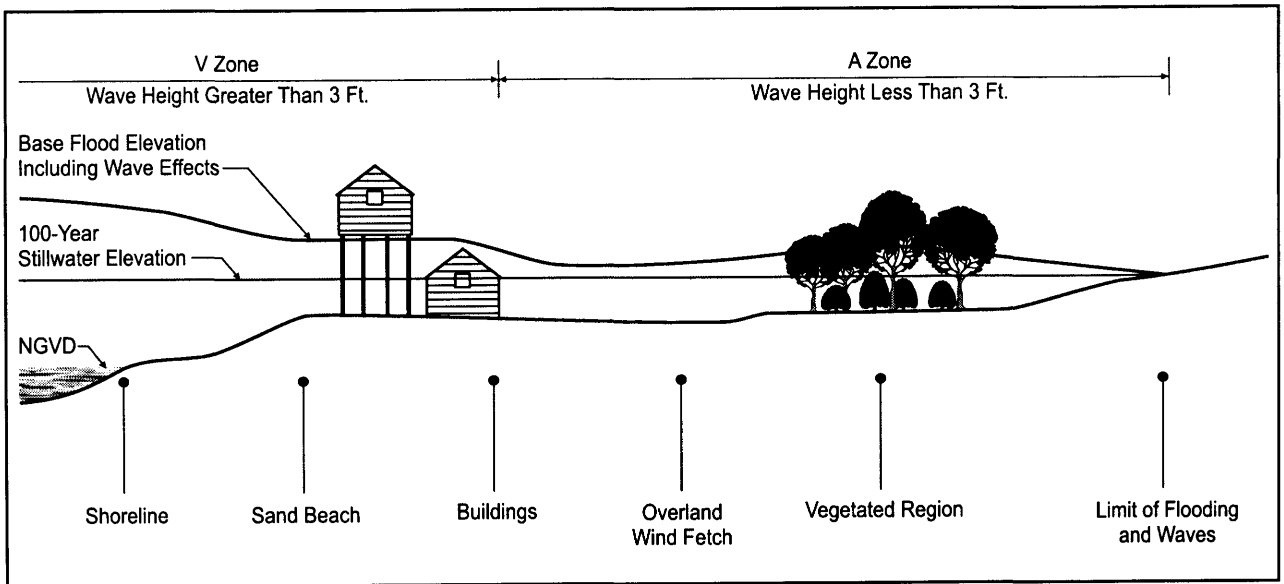
3.3 Coastal Analysis

Areas of coastline subject to significant wave attack are referred to as coastal high hazard zones. The USACE has established the 3-foot breaking wave as the criterion for identifying the limit of coastal high hazard zones (USACE, 1975). The 3-foot wave has been determined as the minimum size wave capable of causing major damage to conventional wood frame and brick veneer structures.

Figure 4 is a profile for a typical transect illustrating the effects of energy dissipation and regeneration on a wave as it moves inland. This figure shows the wave crest elevations being decreased by obstructions, such as buildings, vegetation, and rising ground elevations, and being increased by open, unobstructed wind fetches. Figure 4 also illustrates the relationship between the local still water elevation, the ground profile and the location of the V/A boundary.

Offshore wave characteristics representing a 100-year storm were developed using the Shore Protection Manual (USACE, 1984) equations for slowly moving hurricanes. The storm statistics used in these equations were taken from NOAA Technical Memorandum NWS HYDRO-23 titled "*Storm Tide Frequency Analysis for the Coast of Puerto Rico*", (May 1975), and "*Final Report on Phase I of Storm-Surge Modeling for Puerto Rico and the U.S. Virgin Islands Using SLOSH*", (April 1984). Mean wave characteristics were determined as specified in the FEMA guidance for V Zone mapping:

$$H_{bar} = (h_s)(0.626)$$
$$T_{bar} = (T_s)(0.85)$$



TRANSECT SCHEMATIC Figure 4

Wave H_{bar} is the average wave height of all waves, H_s is the significant wave height or the average over the highest one third of waves, T_{bar} is the average wave period, and T_s is the significant wave associated with the significant wave height.

The transects were located with consideration given to the physical and cultural characteristics of the land so that they would closely represent conditions in their locality. Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, the transects were spaced at larger intervals. It was also necessary to locate transects in areas where unique flooding existed and in areas where computer wave heights varied significantly between adjacent transects. Transects are shown on the FIRM panels for the Islands of St. Croix, St. John, and St. Thomas.

The transects profiles were obtained using NOAA bathymetry dated 1998 and topographic contours obtained from aerial photogrammetry dated 1994.

A non-standard erosion methodology was applied to determine beach erosion during hurricanes along the coastlines of the St. Croix, St. John and St. Thomas Islands. The sandy beaches of U.S. Virgin Islands are characterized by 1-3 foot veneer of sand overlaying rocky ledges. Through examination of pre- and post-storm photographs, it has been determined that a portion of this sand veneer is removed by wave action to expose the rocky ledge beneath. This assumption was verified by review of available literature such as, Hubbard (1991), conversations with specialists in the field (Dr. Dennis Hubbard, November, 4, 2002), and site investigation (August, 2002).

Nearshore wave-induced processes, such as wave setup and wave runup, constitute a greater part of the combined wave envelope that storm surge due to the islands' high cliffs and location exposed to ocean waves. For this particular environment, the Coastal Engineer Manual Methodology (USACE, 2002) was used to determine wave setup along the coastline.

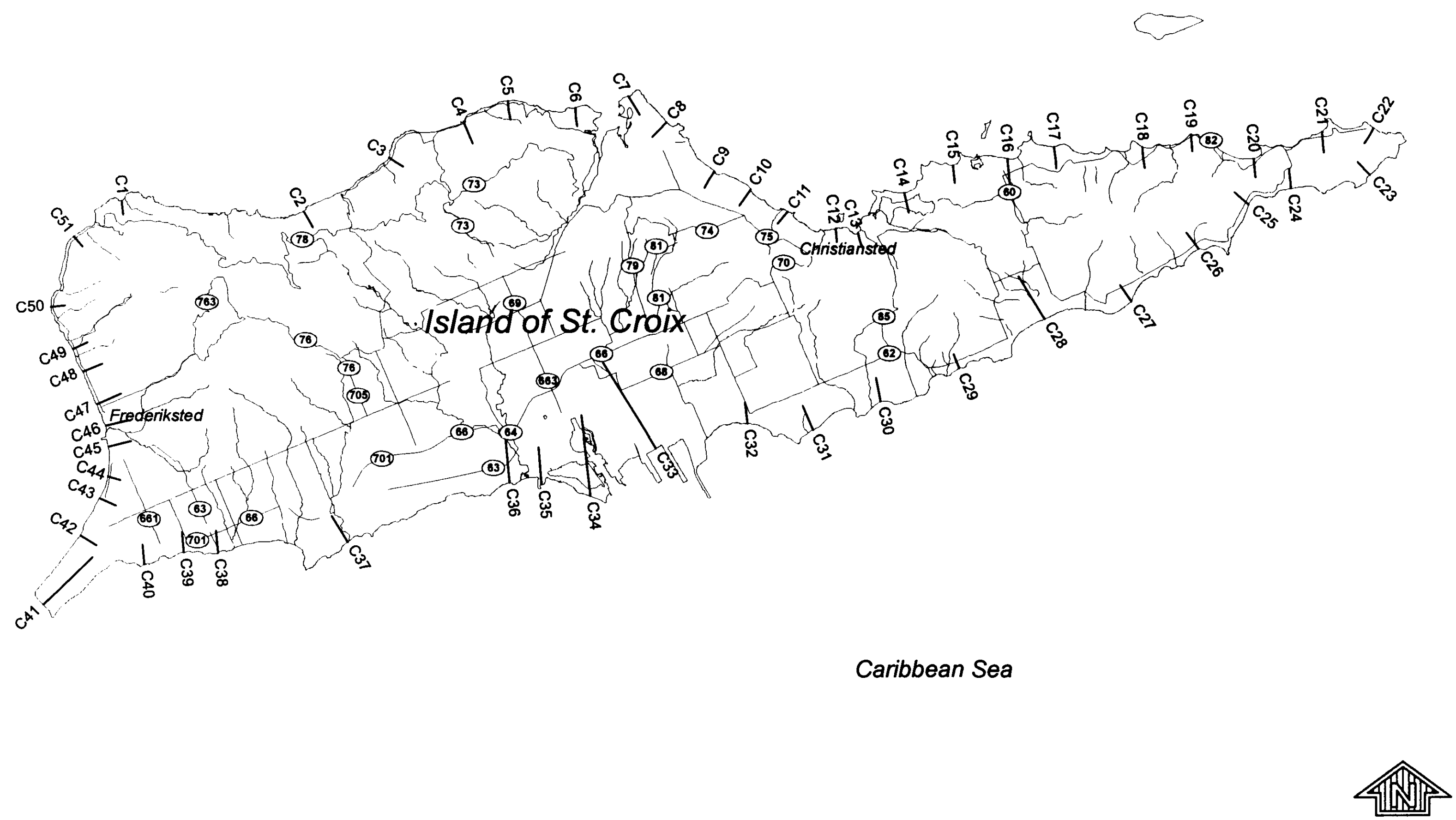
Fringing offshore coral reefs surround St. Thomas, St. John, and St. Croix, inducing a localized variation in wave setup values. A modified wave setup approach was applied in those locations where reefs extend above the breaking depth of the incident wave height. The criterion applied was based upon the methodology outlined by Gourlay (1996).

Wave height calculation used in this study follows the methodology described in the FEMA (2003), Appendix D, of the Guidelines and Specifications for Flood Hazard Mapping Partners.

RUNUP 2.0 was used to predict wave runup value on natural shore then adjusted to follow the FEMA (2005) "Procedure Memorandum No. 37" that recommends the use of the 2% wave runup for determining base flood elevations. For wave run-up at the crest of a slope that transitions to a plateau or downslope, run-up values were determined using the "Methodology for wave run-up on a hypothetical slope" as described in the FEMA (2003), Appendix D, of the Guidelines and Specifications for Flood Hazard Mapping Partners.

In areas dominated by steep vertical cliffs surrounded by deep waters, waves do not break prior to reach the coast. In absence of wave breaking, the majority of wave energy will be reflected and the elevation of the "wetted area" at the cliff will be determined by the stillwater elevation plus ½ of the deep water wave height.

Figure 5, "Transect Location Map," illustrates the location of the transects. Along each transect, wave envelopes were computed considering the combined effects of changes in ground elevation, vegetation and physical features. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and engineering judgment to determine the aerial extent of flooding. The results of the calculations are accurate until local topography, vegetation, or cultural development within the community undergo major changes. The transect data for the three islands are presented in Table 6, "Transect Descriptions," which describes the location of each transect. In addition, Table 6, provides the 1-percent annual chance stillwater and maximum wave crest elevations for each transect along the island coastline. In Table 7, "Transect Data," the flood hazard zone and base flood elevations for each transect flooding source is provided, along with the 1-percent annual chance stillwater elevation for the respective flooding source.



Approximate Scale

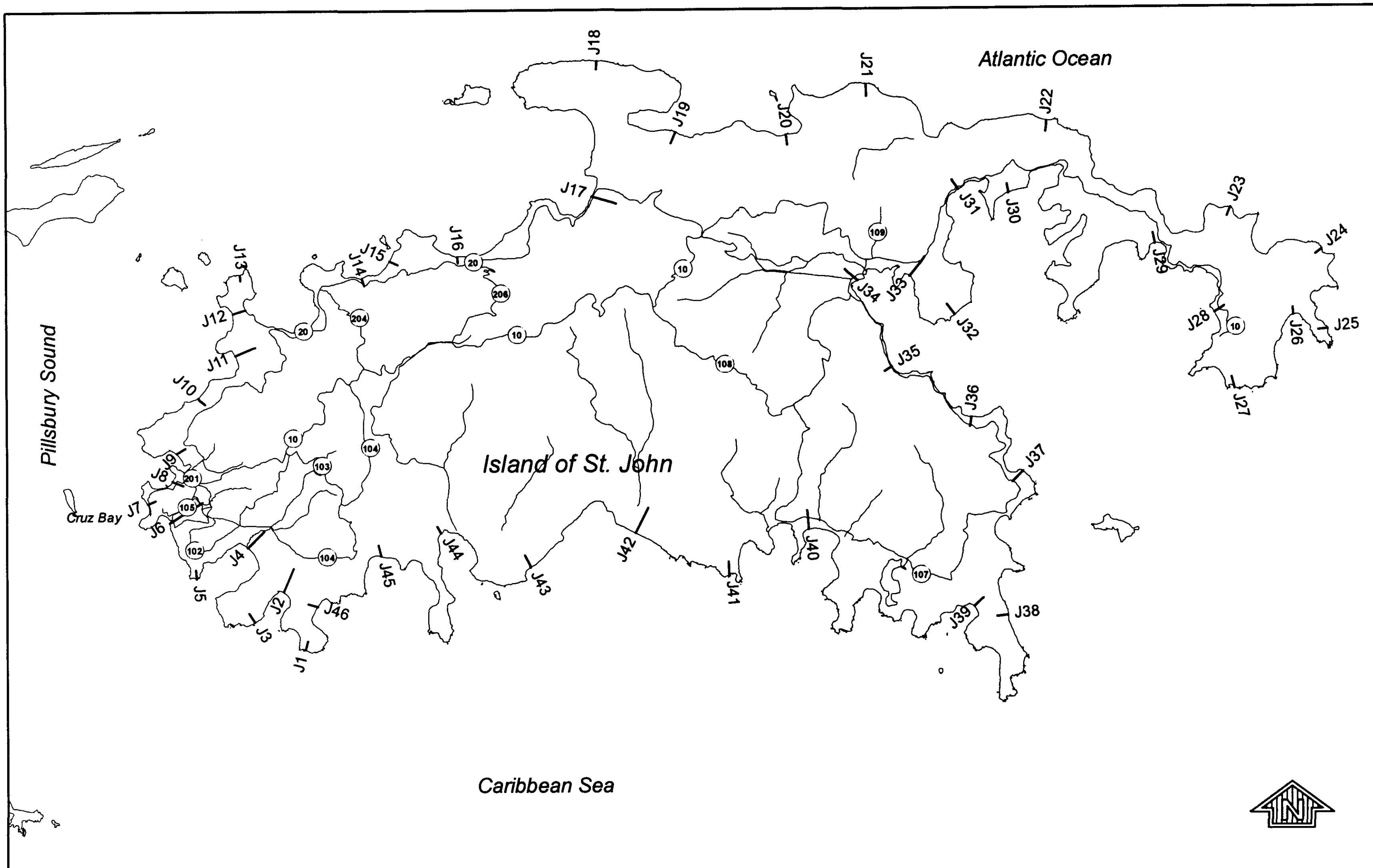
0 8,000 16,000 32,000 Feet

FEDERAL EMERGENCY MANAGEMENT AGENCY

ISLAND OF ST. CROIX
UNITED STATES VIRGIN ISLANDS (USVI)

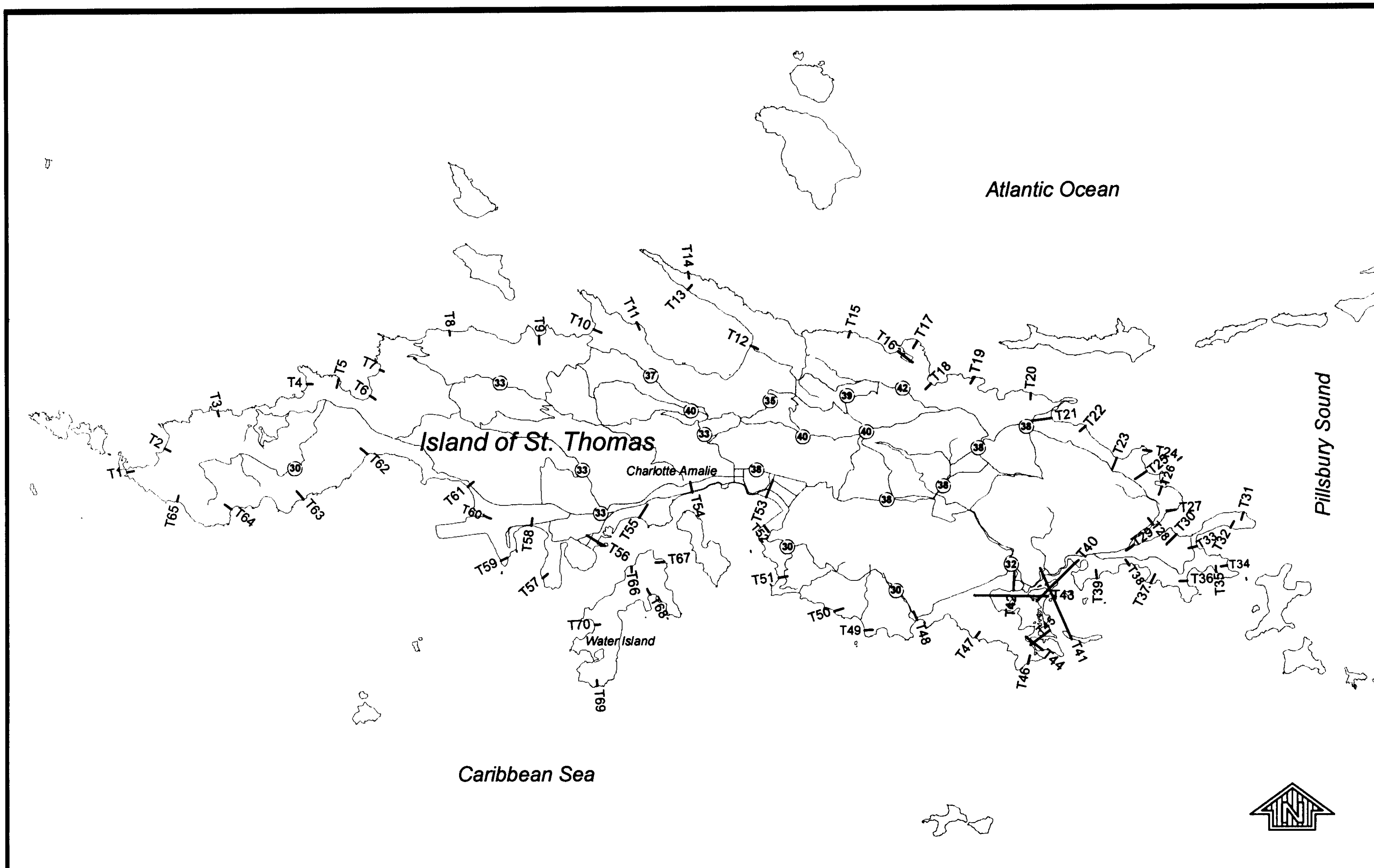
TRANSECT LOCATION MAP

Figure 5a



FEDERAL EMERGENCY MANAGEMENT AGENCY **ISLAND OF ST. JOHN** **UNITED STATES VIRGIN ISLANDS (USVI)**	Approximate Scale 0 3,500 7,000 14,000 Feet TRANSECT LOCATION MAP

Figure 5b



FEDERAL EMERGENCY MANAGEMENT AGENCY

ISLAND OF ST. THOMAS
UNITED STATES VIRGIN ISLANDS (USVI)

Approximate Scale
0 3,700 7,400 14,800
Feet

TRANSECT LOCATION MAP

Figure 5c

TABLE 6 - TRANSECT DESCRIPTIONS

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX		
C1	On the Caribbean Sea coastline, on the north side of the island, approximately 1,100 feet west of Hams Bluff, located in Hams Bluff Estate at N 17.77°, W 64.88°	7.9[2]	12.1
C2	On the Caribbean Sea coastline, on the north side of the island, on Davis Beach approximately 1.1 miles east of Annaly Bay, located in Big Fountain Estate at the Carambola resort, at N 17.76°, W 64.83°	7.7[2]	11.8
C3	On the Caribbean Sea coastline, on the north side of the island, on Cane Bay Beach approximately 1,300 feet east of the "Off the Wall" restaurant, located in Cane Bay Estate, at N 17.78°, W 64.81°	7.5[2]	11.5
C4	On the Caribbean Sea coastline, on the north side of the island, approximately 4,200 feet southwest of Baron Bluff, located in Rust Up Twist Estate, at N 17.78°, W 64.79°	7.4[2]	11.4
C5	On the Caribbean Sea coastline, on the north side of the island, at Baron Bluff, located in Clairmont Estate, at N 17.79°, W 64.78°	7.6[2]	11.7
C6	On the Caribbean Sea coastline, on the north side of the island, approximately 2,500 feet west of Salt River Bay entrance, located in Salt River Estate at the Gentlewinds resort, at N 17.78°, W 64.76°	7.9[2]	12.1
C7	On the Caribbean Sea coastline, on the north side of the island, approximately 2,200 feet east of Salt River Bay entrance, located in Judith Fancy Estate, at N 17.78°, W 64.75°	7.4[3]	11.4

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Includes wave setup of 3.3 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C8	On the Caribbean Sea coastline, on the north side of the island, approximately 1,600 feet northwest of an unnamed peninsula, located in Judith Fancy Estate, at N 17.78°, W 64.74°	7.5[2]	11.5
C9	On the Caribbean Sea coastline, on the north side of the island, located in La Grande Princess Estate, at the former Comorant Cove Hotel, approximately 3,200 feet northwest of sugar mill ruins at N 17.77°, W 64.73°	9.1[2]	14.0
C10	On the Caribbean Sea coastline, on the north side of the island, on Little Princess Beach approximately 800 feet northeast of sugar mill ruins, located in Little Princess Estate, at 17.76 degrees N, 64.72 degrees W	10.4[3]	15.9
C11	On the Caribbean Sea coastline, on the north side of the island, at west end of Christiansted Harbor, approximately 2,500 feet east-southeast of intersection of Route 752 and entrance of Club St. Croix, located in Richmond Estate, at N 17.75°, W 64.72°	11.2[3]	17.2
C12	On the Caribbean Sea coastline, on the north side of the island, in Christiansted Harbor at sugar mill ruins along bulkheaded boardwalk, approximately 350 feet from intersection of Queen Cross Street and Strand Street, located in Christiansted, at N 17.75°, W 64.70°	12.6[3]	19.3

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.3 feet
[3]Includes wave setup of 4.5 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C13	On the Caribbean Sea coastline, on the north side of the island, in Gallows Bay approximately 600 feet west of the intersection of Lobster Garden Street and Mount Welcome Road, located in Christiansted, at N 17.75°, W 64.69°	11.8[2]	18.1
C14	On the Caribbean Sea coastline, on the north side of the island, in Beauregard Bay approximately 2,600 feet east of Fort Louise Augusta, located in Batteriet Louise Augusta Estate, at N 17.75°, W 64.68°	7.8[3]	12.0
C15	On the Caribbean Sea coastline, on the north side of the island, in Punnett Bay approximately 1,200 feet southwest from Punnett Point and approximately 2,600 feet west of Green Cay Marina, located in Shoys Estate, at N 17.76°, W 64.67°	7.1[3]	10.9
C16	On the Caribbean Sea coastline, on the north side of the island, in Chenay Bay approximately 1,600 feet southwest of Pull Point and approximately 400 feet east of Southgate Pond, located in Mount Roepstorff and Southgate Farm Estate, at N 17.76°, W 64.66°	8.6[3]	13.2
C17	On the Caribbean Sea coastline, on the north side of the island, in Prune Bay approximately 2,600 feet east of Pull Point near pond, located in Coakley Bay Estate, at N 17.76°, W 64.65°	8.8[3]	13.5

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 4.5 feet
[3]Includes wave setup of 2.6 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C18	On the Caribbean Sea coastline, on the north side of the island, in Solitude Bay approximately 400 feet east of Pow Point directly landward of Buck Island, in the Solitude Beach Estates development, located in Cotton Valley Estate, at N 17.76°, W 64.62°	9.0[2]	13.8
C19	On the Caribbean Sea coastline, on the north side of the island, at eastern end of Yellowcliff Bay approximately 600 feet west of Tague Point, located in Cotton Valley Estate, at N 17.76°, W 64.61°	9.5[3]	14.6
C20	On the Caribbean Sea coastline, on the north side of the island, in Tague Bay approximately 1,400 feet southwest of Romney Point, located in Slob Estate at the St. Croix Yacht Club, at N 17.75°, W 64.60°	9.8[3]	15.0
C21	On the Caribbean Sea coastline, on the north side of the island, in Cottongarden Bay approximately 1,200 feet southwest of Cottongarden Point, located in Cottongarden Estate in Crower's Park, at N 17.76°, W 64.58°	10.0[3]	15.3
C22	On the Caribbean Sea coastline, on the north side of the island, approximately 2,800 feet west of Point Udall, located in Et Stykke Land Estate, at N 17.76°, W 64.57°	9.7[4]	14.9

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 2.6 feet
[3]Includes wave setup of 2.9 feet
[4]Includes wave setup of 3.2 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C23	On the Caribbean Sea coastline, on the south side of the island, in Isaac Bay approximately 900 northeast of Isaac Point, and approximately 2,500 feet southwest of Point Udall, located in Et Stykke Land Estate, at N 17.75°, W 64.57°	7.9[2]	12.1
C24	On the Caribbean Sea coastline, on the south side of the island, in Grapetree Bay approximately 1,800 feet east of Grapetree Point, located in Grapetree Bay Estate, at N 17.74°, W 64.59°	8.4[2]	12.9
C25	On the Caribbean Sea coastline, on the south side of the island, in Turner Hole approximately 2,600 feet southwest of Grapetree Point and approximately 1,800 feet east of the Divi Carina Resort & Casino, located in Turners Hole Estate, at N 17.74°, W 64.60°	10.1[3]	15.4
C26	On the Caribbean Sea coastline, on the south side of the island, in Rod Bay approximately 2,600 feet west of Grass Point, located in Madame Carty Estate, at N 17.73°, W 64.61°	7.7[4]	11.8
C27	On the Caribbean Sea coastline, on the south side of the island, at the west end of Robin Bay near pond, located in Mount Fancy Estate, at N 17.72°, W 64.63°	7.3[4]	11.2

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.2 feet
[3]Includes wave setup of 3.1 feet
[4]Includes wave setup of 2.7 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C28	On the Caribbean Sea coastline, on the south side of the island, at the center of Great Pond Bay approximately 4,800 feet northeast of Milord Point, located in Hartmanns Estate, at N 17.72°, W 64.65°	9.0[2]	13.8
C29	On the Caribbean Sea coastline, on the south side of the island, approximately 3,000 west of Fareham Point between Fareham Bay and Spring Bay, located in Castle Nugent Estate, at N 17.71°, W 64.67°	11.5[2]	17.6
C30	On the Caribbean Sea coastline, on the south side of the island, in Halfpenny Bay approximately 2,500 feet west of Ferrall Point, located in Longford Estate, at N 17.70°, W 64.70°	7.0[3]	10.8
C31	On the Caribbean Sea coastline, on the south side of the island, approximately 1,400 feet east of Vagthus Point, located in Retreat Estate, at N 17.70°, W 64.71°	8.8[3]	13.5
C32	On the Caribbean Sea coastline, on the south side of the island, in Canegarden Bay approximately 4,800 feet west of Vagthus Point, located in Canegarden Estate, at N 17.70°, W 64.73°	8.4[3]	12.9
C33	On the Caribbean Sea coastline, on the south side of the island, at Hovensa Oil Refinery approximately 4,400 feet east of Krause Lagoon Channel (Harvey Channel) outlet, located in Krauses Lagune Estate, at N 17.70°, W 64.75°	9.0[3]	13.8

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 2.7 feet
[3]Includes wave setup of 2.6 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C34	On the Caribbean Sea coastline, on the south side of the island, approximately 1,000 feet southwest of Krause Lagoon Channel (Harvey Channel) outlet located in Krauses Lagune Estate, at N 17.69°, W 64.76°	7.8[2]	12.5
C35	On the Caribbean Sea coastline, on the south side of the island, immediately east of landfill approximately one mile west of Krause Lagoon, located in Krauses Lagune Estate, at N 17.69°, at W 64.77°	8.6[2]	13.2
C36	On the Caribbean Sea coastline, on the south side of the island, approximately 1,500 feet southeast of the racetrack, located in Mannings Bay Estate, at N 17.69°, W 64.78°	9.6[2]	14.7
C37	On the Caribbean Sea coastline, on the south side of the island, approximately 4,200 feet east of Long Point, located in Enfield Green Estate, at N 17.68°, W 64.82°	9.7[2]	14.9
C38	On the Caribbean Sea coastline, on the south side of the island, in Good Hope Bay, approximately 2,100 feet east of the Good Hope School and approximately 800 feet south of intersection of Highways 63 and 701, located in Hope and Carlton Land Estate, at N 17.68°, W 64.86°	10.4[2]	15.9
C39	On the Caribbean Sea coastline, on the south side of the island, approximately 900 feet southwest of intersection of Highway 66 and Caribbean Avenue, located in Camporico Estate, at N 17.68°, W 64.86°	11.0[2]	16.9

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 2.6 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C40	On the Caribbean Sea coastline, on the south side of the island, approximately 1 ½ miles east of Southwest Cape Light, located in Concordia Estate, at N 17.68°, W 64.87°	11.8[2]	18.1
C41	On the Caribbean Sea coastline, on the west side of the island, 1,000 feet west of Southwest Cape Light and 1,000 feet northwest of Sandy Point, located in Camporico Estate, at N 17.67°, W 64.90°	8.4[3]	12.9
C42	On the Caribbean Sea coastline, on the west side of the island, approximately 1.6 miles southwest of Frederiksted pier along shore, located in Whim Estate, at N 17.69°, W 64.89°	9.8[3]	15.0
C43	On the Caribbean Sea coastline, on the west side of the island, approximately one mile southwest of Frederiksted pier along shore, at north end of Westend Saltpond, located in Hesselberg Estate, at N 17.70°, W 64.88°	8.9[3]	13.7
C44	On the Caribbean Sea coastline, on the west side of the island, approximately 2,300 feet south of Frederiksted pier along shore at foot of Two Brothers Road, located in Two Brothers Estate, at N 17.70°, W 64.88°	5.0[3]	17.0[3]
C45	On the Caribbean Sea coastline, on the west side of the island, at Frederiksted waterfront at corner of Hill and Strand Streets approximately 800 feet south of Frederiksted pier, located in Frederiksted, at N 17.71°, W 64.88°	7.8[3]	12.0

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 2.6 feet
[3]Includes wave setup of 3.3 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. CROIX - continued		
C46	On the Caribbean Sea coastline, on the west side of the island, at Frederiksted Beach approximately 400 feet northwest of intersection of Queen Street and Highway 63, located in Frederiksted, at N 17.71°, W 64.88°	8.3[2]	12.7
C47	On the Caribbean Sea coastline, on the west side of the island, approximately 300 feet north of the intersection of Highway 63 and Mahogany Road, located in Prosperity Estate, at N 17.72°, W 64.88°	8.5[2]	13.1
C48	On the Caribbean Sea coastline, on the west side of the island, approximately 700 feet northwest of Highway 63 and Prosperity Road, located in William Estate, at N 17.73°, W 64.88°	8.7[2]	13.4
C49	On the Caribbean Sea coastline, on the west side of the island, on Sprat Hole Beach approximately 1,700 feet south of Sprat Hole, located in William Estate, at N 17.73°, W 64.89°	8.1[2]	12.4
C50	On the Caribbean Sea coastline, on the west side of the island, approximately 2000 feet south of Butler Bay, located in Prospect Hill Estate, at 17.74 degrees N, 64.89 degrees W	4.2	14.0[4]
C51	On the Caribbean Sea coastline, on the west side of the island, 2000 feet southwest of Hams Bay, located in Northside Estate, at 17.76 degrees N, 64.88 degrees W	7.9[3]	12.1

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.3 feet
[3]Includes wave setup of 3.5 feet
[4]Wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN		
J1	Across Pillsbury Sound, on the south side of the island, on the west side of Bovocoap Point, in Devers Bay, approximately 553 feet southwest of the end of Bovocoap Point Road, at N 18.31012°, W 64.78175°	3.8	25.0[3]
J2	Across Pillsbury Sound, on the south side of the Island, through Chocolate Hole Bay, at approximately 895 feet west of the intersection between Chocolate East Road and Hawk HI, at N 18.31747°, W 64.78382°	8.2[2]	12.6
J3	Across Pillsbury Sound, on the southwest side of the Island, at Maria Bluff, approximately 441 feet southeast of the intersection between Great Cruz Bay Road and Maria Bluff Rd, at N 18.31358°, W 64.78746° (point taken offshore from boat)	4.5	25.0[4]
J4	Across Pillsbury Sound, on the west side of the Island, through Great Cruz Bay, at the Westin Resort approximately 1,245 feet west of intersection between Route 104 and Great Cruz Bay Road, at N 18.32285°, W 64.78761°	6.2[3]	9.1
J5	Across Pillsbury Sound, on the west side of the Island, at Contant Point approximately 630 feet south of the end of Idesephus Road, at N 18.31954°, W 64.79453°	4.2	25.0[4]
J6	Across Pillsbury Sound, on the west side of the Island, through Turner Bay approximately 650 feet southwest of intersection between Fishfry Drive and Grigni Street, at N 18.32900°, W 64.79289°	6.9[3]	10.6
J7	Across Pillsbury Sound, on the west side of the Island, at Frank Bay approximately 80 feet northwest of intersection between Tobacco Road and Seagrape Lane, at N 18.32869°, W 64.79848°	3.7	7.9[5]

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Includes wave setup of 2.4 feet
[4]Maximum 1-percent annual chance wave elevation due to wave reflection
[5]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J8	Across Pillsbury Sound, on the west side of the Island, downtown Cruz Bay, approximately 250 feet southwest of ferry dock, at N 18.33105°, W 64.79561°	3.1	6.7[3]
J9	Across Pillsbury Sound, on the west side of the Island, approximately 900 feet north-northwest of Intersection between Route 20 and Dronnigens Grade, at N 18.33405°, W 64.79465°	3.8[2]	5.7
J10	Across Pillsbury Sound, through Salomon Bay, on the west side of the Island, approximately 1,920 feet northeast of Lind Point Road, at N 18.33978°, W 64.79169°	4.1[2]	6.2
J11	Across Pillsbury Sound, through Caneel Bay, on the west side of the island at Caneel Bay Resort, approximately 1,769 feet northwest of Resort Gate at Route 20, at N 18.34404°; W 64.78694°	3.9[2]	5.9
J12	Across Pillsbury Sound on the northwest side of the island, between Turtle Bay and Caneel Bay, approximately 2,080 feet northwest of intersection between Route 20 and Caheel Trail, at N 18.34847°, W 64.78674°	4.9	9.0[3]
J13	Across the Atlantic Ocean, on the north side of the Island, at Hawksnest Point approximately 3,030 feet North of intersection between Route 20 and Caheel Trail, at N 18.35345°, W 64.78621°	7.3	25.0[4]
J14	Across the Atlantic Ocean, on the north side of the Island, west of Trunk Bay Beach, approximately 1,725 feet east of intersection between Route 20 and Route 204, at N 18.35°, W 64.77	7.4	17.0[3]

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 0.7 feet
[3]Maximum 1-percent annual chance wave runup elevation
[4]Maximum 1-percent annual chance wave elevation due to wave reflection

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J15	Across the Atlantic Ocean, on the north side of the Island, and Trunk Bay Beach, approximately 1,250 feet west -northwest of intersection between Route 20 and Peter Bay Road, at N 18.35293°, W 64.76835°	10.9[2]	16.7
J16	Across the Atlantic Ocean, through Cinnamon, on the north side of the Island, at Cinnamon Bay Campground, approximately 690 feet west-northwest of intersection between Route 20 and Route 206, at N 18.35°, W 64.77°.	7.1	16.6[5]
J17	Across the Atlantic Ocean, on the north side of the Island, through Maho Bay, approximately 4,630 feet west of intersection between Route 20 and Route 10, at N 18.35786°, W 64.74463°	9.6[3]	14.7
J18	Across the Atlantic Ocean, on the north side of the Island, across the Narrows, at Mary Point, approximately 1.54 miles northwest of intersection between Route 20 and Route 10, at N 18.37358°, W 64.74757	5.9	13.9[5]
J19	Across the Atlantic Ocean, on the north side of the Island, at Leinster Bay, approximately 1,714 feet west of Annaberg Sugar Mill Ruins, At N 18.36354°, W 64.73343°	7.2[4]	10.3
J20	Across the Atlantic Ocean, on the north side of the Island, between Watermelon Cay and Leinster Point, approximately 2,682 feet east of Annaberg Sugar Mill Ruins, at N 18.36423°, W 64.72437°	6.0	11.9[5]
J21	Across the Atlantic Ocean, on the north side of the Island, at Threadneedle Point, approximately 1.19 miles northeast of Annaberg Sugar Mill Ruins, at N 18.36793°, W 64.71335°	5.6	14.3[5]

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Includes wave setup of 2.5 feet
[4]Includes wave setup of 0.5 feet
[5]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J22	Across the Atlantic Ocean, on the north side of the Island, at N 18.36183°, W 64.69176°	5.3	10.0[3]
J23	Across the Atlantic Ocean, on the north side of the Island, at N 18.35029°, W 64.67219°	4.8	25.0[4]
J24	Across the Atlantic Ocean, on the east side of the Island, between Newfound Bay and East End Point, At N 18.34531°, W 64.66168°	3.5	25.0[4]
J25	Across the Atlantic Ocean, on the east side of the Island, at eastern side of Privateer Point, approximately 1.05 miles east of the end of Route 10 at Long Point, At N 18.33431°, W 64.66133°	3.4	25.0[4]
J26	Across the Caribbean Sea, on the east side of the Island, across Privateer Bay, approximately 4,500 feet northeast of the end of Route 10 at Long Point, at N 18.33760°, W 64.66637°	7.1[2]	10.9
J27	Across the Caribbean Sea, on the east side of the Island, between Red Point and Pond Bay, approximately 1753 feet southeast of the end of Route 10 at Long Point, at N 18.32966°, W 64.67439°	3.8	25.0[4]
J28	Across the Caribbean Sea, on the east side of the Island, between Hansen Bay and Long Bay, approximately 1,477 feet northeast of the end of Route 10 at Long Point, at N 18.33871°, W 64.67489°	3.8	14.1[3]
J29	Across the Caribbean Sea, on the east side of the Island, between Elk Bay and Limetree Cove, approximately 1 mile north of the end of Route 10 at Long Point, at N 18.34680°, W 64.6803°	3.9	13.0[3]

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Maximum 1-percent annual chance wave runup elevation
[4]Maximum 1-percent annual chance wave elevation due to wave reflection

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J30	Across the Caribbean Sea, on the east side of the Island, east of Mardenboro Point, across Hurricane Hole, approximately 1.14 mile east-northeast of intersection between Route 10 and Route 109, At N 18.35313°, W 64.69759°	4.6	12.6[3]
J31	Across the Caribbean Sea, on the east side of the Island, across Borck Creek and Hurricane Hole at Estate Zootenval, approximately 4,375 feet northeast of intersection between Route 10 and Route 109, at N 18.35501°, W 64.70286°	8.2[2]	12.6
J32	Across the Caribbean Sea, on the east side of the Island, through Coral Bay and Harbor Point, approximately 3,955 feet southeast of intersection between Route 10 and Route 109, at N 18.34081°, W 64.70372°	4.7	13.0[3]
J33	Across the Caribbean Sea, on the east side of the Island, at east side of Coral Harbor, approximately 1,617 feet southeast of intersection between Route 10 and Route 109, at N 18.34740°, W 64.70768°	9.2[2]	14.1
J34	Across the Caribbean Sea, on the east side of the Island, through Coral Harbor and Coral Bay approximately 310 feet southeast of intersection between Route 107 and Route 20 at N 18.34618°, W 64.71584°	9.2[2]	14.1
J35	Across the Caribbean Sea, on the east side of the Island, through Sanders Bay and Hurricane Hole approximately 3,315 feet southeast of intersection between Route 107 and Route 108 at N 18.33670°, W 64.71258°	8.6[2]	13.2

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.2 feet
[3]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J36	Across the Caribbean Sea, on the east side of the Island, through Johnson Bay, approximately 545 feet northwest of intersection between Route 107 and Finningan's Reef Road at N 18.32975°, W 64.70378°	7.6[2]	11.7
J37	Across the Caribbean Sea, on the east side of the Island, at Sabbat Point, approximately 2,113 feet northwest of intersection between Route 107 and St. Quacco Street, at N 18.32305°, W 64.69833°	7.9[3]	12.1
J38	Across the Caribbean Sea, on the east side of the Island, at Drunk Bay, approximately 1.44 miles south of intersection between Route 107 and St. Quacco Street, at N 18.30840°, W 64.70103°	4.1	15.0[4]
J39	Across the Caribbean Sea, on the south side of the Island, at National Park Saltpond Bay Beach, approximately 1.38 miles southwest of intersection between Route 107 and St. Quacco Street, at N 18.30891°, W 64.70539°	7.1[3]	10.9
J40	Across the Caribbean Sea, on the south side of the Island, through Great Lameshur Bay, approximately 4,986 feet south of intersection between Route 107 and Route 108, at N 18.31825°, W 64.72411°	7.8[3]	12.0
J41	Across the Caribbean Sea, on the south side of the Island, at White Point, approximately 1.36 miles southwest of intersection between Route 107 and Route 108, N 18.31374°, W 64.73332	3.9	25.0[5]
J42	Across the Caribbean Sea, on the south side of the Island, through Reef Bay, at approximately 1,100 feet southeast of Plantation Ruins, N 18.31851°, W 64.74220	8.3[3]	12.7

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.2 feet
[3]Includes wave setup of 3.5 feet
[4]Maximum 1-percent annual chance wave runup elevation
[5]Maximum 1-percent annual chance wave elevation due to wave reflection

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. JOHN - continued		
J43	Across the Caribbean Sea, on the south side of the Island, West of Genti Bay across Reef Bay, at approximately 1,068 feet southeast of intersection between Marina Drive and Hilltop Road, at N 18.32°, W 64.76°	7.7[2]	11.8
J44	Across the Caribbean Sea, on the south side of the Island, through Fish Bay, at approximately 792 feet south-southeast of intersection between Marina Drive and Arawak Road, at N 18.32217°, W 64.76593°	8.8[3]	13.5
J45	Across the Caribbean Sea, on the south side of the Island, at Rendezvous Bay, at approximately 980 feet southeast of intersection between Route 104 and Fish Bay Route , at N 18.32°, W 64.77°	7.6[3]	11.7
J46	Across the Caribbean Sea, on the south side of the Island, in Hart Bay, approximately 890 feet southeast of intersection between Bovocoap Road and Hawk HY, at N 18.31535°, W 64.77875°	4.0	11.3[4]

[1]Because of map scale limits, maximum wave elevation may not be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Includes wave setup of 3.4 feet
[4]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS		
T1	Out to the Caribbean Sea, at Mermaids Chair, approximately 1.4 miles west of the intersection of Route 311 and Route 30 (Fortuna Road), at N 18.35172°, W 65.04130°	3.9	26.0[3]
T2	Out to the Atlantic Ocean, at Botany Bay, approximately 0.9 mile west of the intersection of Route 311 and Route 30 (Fortuna Road), at N 18.35383°, W 65.03527°	5.2	16.2[3]
T3	Out to Atlantic Ocean, at Bordeaux Point, approximately 0.6 mile northwest of the intersection of Route 311 and Route 30 (Fortuna Road), at N 18.36276°, W 65.1948°	5.0	25.0[4]
T4	Out to Atlantic Ocean, at Stumpy Bay, approximately 1,650 feet northwest of the intersection of Route 318 and Route 30 (Fortuna Road), at N 18.36658°, W 65.00748°	8.8[2]	13.5
T5	Out to Atlantic Ocean, at Flagstok Hill, approximately 1,620 feet northeast of the intersection of Route 311 and Route 30 (Fortuna Road), at N 18.37, W 65.00	5.4	25.0[4]
T6	Out to Atlantic Ocean, at Santa Maria Bay, approximately 0.55 mile east of the intersection of Route 318 and Route 30 (Fortuna Road), at N 18.36355°, W 64.99555° (point taken offshore by boat)	9.0[2]	13.8
T7	Out to Atlantic Ocean, at Hendrik Bay, approximately 0.76 mile northeast of the intersection of Route 318 and Route 30 (Fortuna Road), at N 18.36665°, W 64.99444° (point taken offshore by boat)	9.0[2]	13.8

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Maximum 1-percent annual chance wave runup elevation
[4]Maximum 1-percent annual chance wave elevation due to wave reflection

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T8	Out to Atlantic Ocean, at Konink Point, approximately 0.65 mile north of the intersection of Route 332 and Route 33 (Crown Mountain Road), at N 18.36°, W 64.98°	5.1	19.2[3]
T9	Across Dorothea Bay at the Dorothea Bay Condominiums, approximately 0.79 mile north of the intersection of Route 333 and Route 33 (Crown Mountain Road), at N 18.36947°; W 64.96151°	9.6[2]	14.7
T10	Out to Atlantic Ocean, through Hull Bay, approximately 1,225 feet north of the intersection of Route 37 and Route 404, at N 18.36950°, W 64.95152°	9.8[2]	15.0
T11	Across Magent Bay, north of Reseau Bay, approximately 0.63 mile northeast of the intersection of Route 37 and Route 404, at N 18.37, W 64.94	6.3	25.0[4]
T12	Across Magens Bay, on Magens Bay Beach, approximately 0.70 mile northwest of the intersection of Magens Road and Mahogany Run, at N 18.36370°, W 64.92401°	10.1[2]	15.5
T13	On the southwest shoreline of Picara Point across Magens Bay, approximately 1.74 miles northwest of the intersection of Magens Road and Mahogany Run, at N 18.38, W 64.93	9.3[2]	15.5

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Maximum 1-percent annual chance wave runup elevation
[4]Maximum 1-percent annual chance wave elevation due to wave reflection

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T14	On the northeast shore of Picara Point across the Atlantic Ocean, approximately 1.87 miles northwest of the intersection of Magens Road and Mahogany Run, at N 18.38°, W 64.93°	5.9	25.0[3]
T15	Out to the Atlantic Ocean, in Lovelund, approximately 1.74 miles northeast of the intersection of Magens Road and Mahogany Run, at N 18.36467°, W 64.90475°	6.5	25.0[3]
T16	Out to the Atlantic Ocean, across Mandal Bay approximately 0.45 mile northeast of the intersection of Wintberg Road and Mandal Road, at N 18.36118°, W 64.89497°	10.3[2]	15.8
T17	Out to the Atlantic Ocean, across the Leeward Passage, approximately 0.69 mile northeast of the intersection of Wintberg Road and Mandal Road, at N 18.36179°, W 64.89201°	6.9	25.0[3]
T18	Out to the Atlantic Ocean, through Tutu Bay, across the Leeward Passage, approximately 0.64 mile east of the intersection of Wintberg Road and Mandal Road, at N 18.35506°, W 64.88999°	7.0	21.2[4]
T19	Out to the Atlantic Ocean, across the Leeward Passage approximately 0.59 mile northeast of Route 42 and Route 40, at N 18.36°, W 64.88°	6.5	25.0[3]
T20	Out to the Atlantic Ocean, between Spring Bay and Coki Bay across the Leeward Passage, approximately 0.40 mile north of the intersection Route 388 and Route 38 (Smith Bay Road), N 18.35°, W 64.87°	5.7	22.7[4]

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Maximum 1-percent annual chance wave elevation due to wave reflection
[4]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T21	Across Water Bay and Pillsbury Sound at the Renaissance Grand Beach Resort, approximately 0.32 mile northeast of the intersection of Route 388 and Route 38 (Smith Bay Road), N 18.34655°, W 64.86786°	6.8[2]	10.2
T22	Across Pillsbury Sound at the Wyndham Hotel and Resort on Footer Point, approximately 0.72 mile east of the intersection of Route 388 and Route 38 (Smith Bay Road), at N 18.34444°, W 64.86188°	6.2	21.7[3]
T23	Across Smith Bay and Pillsbury Sound, approximately 0.43 mile southwest of Coki Point, at N 18.33845°, W 64.85665°	6.2	10.7[3]
T24	On the east tip of Cabes Point, across Pillsbury Sound, at N 18.33909°, W 64.85017°	6.2	19.0[3]
T25	Across Pillsbury Sound and St. John Bay through Sapphire Beach Resort Condominiums, approximately 1,300 feet southeast of Coki Point N 18.33562°, W 64.85116°	6.2[2]	9.2
T26	Across Pillsbury Sound through Sapphire Beach Marina, adjacent to Red Bay, approximately 1,000 feet south of Footer Point, at N 18.33329°, W 64.84824°	6.0[2]	8.9
T27	Across Pillsbury Sound and Red Hook Bay on Red Hook Point, approximately 1.13 miles northeast of the intersection of Route 322 and Route 32 (Redhook Road), at N 18.32820°, W 64.84675°	5.4	8.8[3]
T28	Through Red Hook Marina, at Off the Hook Restaurant approximately 0.79 miles northeast of the intersection of Route 322 and Route 32 (Redhook Road), at N 18.32544°, W 64.85081	7.2[2]	9.7

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 0.6 feet
[3]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T29	Out to Pillsbury Sound through Vessup Bay, out to Redhook Bay, approximately 0.45 mile north of Beverhout Point N 18.32316°, W 64.85238°	7.9[2]	11.7
T30	Out to Pillsbury Sound , through Muller Bay, approximately 0.69 mile northeast Beverhout Point N 18.32426°, W 64.84703°	6.6[2]	9.8
T31	Out to Pillsbury Sound, at Cabrita Point (North side), approximately 0.72 mile northeast of the end of Route 322, at N 18.32602°, W 64.83376°	4.3	18.8[4]
T32	Through Great Bay, on Cabrita Point (south side), approximately 0.51 mile east of the end of Route 322, at N 18.32419°, W 64.8354°	4.9	11.4[4]
T33	Out to Pillsbury Sound, across Great Bay, approximately 640 feet southeast of the end of Route 322 N 18.32203°, W 64.84314°	5.3	9.5[4]
T34	Across Pillsbury Sound, on the east end of Water Point, approximately 0.56 mile southeast of the end of Route 322, at N 18.32°, W 064.84°	4.7	13.2[4]
T35	On the south side of Water Point across Cowpet Bay, approximately 0.53 mile southeast of the end of Route 322, at N 18.32°, W 64.84°	4.7	13.6[4]
T36	On the eastern side of Deck Point across Cowpet Bay, approximately 0.53 mile south of the end of Route 322, at N 18.31526°, W 64.84545°	7.7[3]	11.8
T37	Out to the Caribbean Sea, across Jersey Bay, approximately 0.53 mile southeast of the intersection of Route 322 and Route 32 (Redhook Road), at N 18.31581°, W 64.85190°	4.7	17.5[4]

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 0.6 feet
[3]Includes wave setup of 3.1 feet
[4]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T38	Across Nazareth Bay and Jersey Bay approximately 0.53 mile southeast of the intersection of Route 322 and Route 32 (Redhook Road), at N 18.32°, W 64.86°	8.1[2]	12.4
T39	Just east of Compass Point across Jersey Bay, approximately 1,600 feet south of the intersection of Route 322 and Route 32 (Redhook Road), at N 18.31763°, W 64.86234°	8.9[2]	13.7
T40	Across Bovoni Cay and Benner Bay, approximately 0.56 mile southeast of the intersection of Redhook Road and Bovoni Road, at N 18.32074°, W 64.86543°	7.7	11.0
T41	Through Benner Bay and across Bovoni Cay , approximately 0.56 mile southeast of the intersection of Redhook Road and Bovoni Road, at N 18.31991°, W 64.87215°	8.4[3]	12.9
T42	Across Mangrove Lagoon at Clinton Phipps Racetrack, approximately 1,700 feet south of the intersection of Redhook Road and Bovoni Road, at N 18.31868°, W 64.87914°	9.1	10.9
T43	Across Mangrove Lagoon, Bovoni Cay, and Jersey Bay at St. Thomas landfill approximately 0.61 mile southeast of the intersection of Redhook Road and Bovoni Road, at N 18.31°, W 64.87°	7.1[4]	12.0
T44	Out to the Caribbean Sea, from the north side of Long Point across Patricia Cay, approximately 1.13 miles southeast of the intersection of Redhook Road and Bovoni Road, at N 18.31°, W 64.87°	8.6[3]	13.2
T45	Out to Caribbean Sea, through Mangrove Bay across Patricia Cay, approximately 0.95 mile southeast of the intersection of Redhook Road and Bovoni Road, at N 18.31°, W 64.87°	6.2[4]	11.0

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.1 feet
[3]Includes wave setup of 3.4 feet
[4]Includes wave setup of 0.4 feet

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T46	Out to the Caribbean Sea, on the south end of Long Point, approximately 1.25 miles southeast of the intersection of Redhook Road and Bovoni Road. N 18.30395°, W 64.87637°	3.8	11.0[3]
T47	Out to the Caribbean Sea, on the west side of Long Point across Stalley Bay, approximately 1.0 mile southwest of the intersection of Redhook Road and Bovoni Road, at N 18.31°, W 64.89°	4.4	14.4[3]
T48	Out to the Caribbean Sea, through Bolongo Bay, approximately 1.34 miles southwest of the intersection of Redhook Road and Bovoni Road, at N 18.31319°, W 64.89642°	8.6[2]	13.2
T49	Out to the Caribbean Sea, between Frenchmans Bay and Little Coculus Bay, approximately 1.4 miles southeast of the intersection of Route 315 and Route 30 (Frenchman Bay Road), at N 18.31°, W 64.90°	6.6[2]	10.1
T50	Out to the Caribbean Sea, across Frenchmans Bay, approximately 0.97 mile southeast of the intersection of Route 315 and Route 30 (Frenchman Bay Road), at N 18.31611°, W 64.91108°	7.4[2]	11.4
T51	Across Pacquereau Bay, on the western side of Muhlenfels Point, approximately 0.40 mile southwest of the intersection of Route 315 and Route 30 (Frenchman Bay Road), at N 18.32°, W 64.92°	8.0[2]	12.3
T52	Across Long Bay and St. Thomas Harbor southwest of the intersection of Route 313 and Route 30 (Frenchman Bay Road), at N 18.33212°, W 64.92336°	5.1	7.3[3]
T53	Across Long Bay and St. Thomas Harbor, approximately 1,830 feet east of the intersection of Route 313 and Route 316 (First Avenue), at N 18.33810°, W 64.92105°	5.1	7.4

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.2 feet
[3]Maximum 1-percent annual chance wave runup elevation

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T54	Across St. Thomas Harbor, approximately 0.51 mile east of the intersection of Route 30 and Route 35, at N 18.34°, W 64.94°	6.0	8.6
T55	Across St. Thomas Bay, approximately 1,750 feet southeast of the intersection of Route 304 and Route 30, at N 18.33698°, W 64.93990°	4.5	6.6
T56	Across West Gregerie Channel, through Cruise Ship Berth, approximately 1,160 feet east of the intersection of Route 305 and Route 306, at N 18.33299°, W 64.95181°	3.8	9.0[3]
T57	Out to the Caribbean Sea, West side of Mosquito Point, approximately 0.71 mile southwest of the intersection of Airport Road and Route 304, at N 1832937°, W 64.96364	3.7	25.0[4]
T58	Out to Caribbean Sea, across Lindbergh Bay, approximately 1275 feet east of the intersection of Airport Road and Route 304, at N 18.33570°, W 64.96526°	8.3[2]	12.7
T59	Out to Caribbean Sea, on west side of Red Point, approximately 0.78 mile southwest of the intersection of Airport Road and Route 304, at N18.33112°; W064.97264°	4.7	18.5[3]
T60	Across Brewers Bay, approximately 0.73 mile west of the intersection of Route 303 and Route 30 (Brewers Bay Road), at N 18.34036°, W 64.97582°	7.6[2]	11.7
T61	Through Brewers Bay and the Caribbean Sea, approximately 0.94 mile northwest of the intersection of Route 303 and Route 30 (Brewers Bay Road), at N 18.34397°, W 64.97733°	7.7[2]	11.8
T62	Out to the Caribbean Sea, across Perseverance Bay, approximately 0.39 mile southwest of the intersection of Route 301 and Route 30 (Fortuna Road), at N 18.34748°, W 64.99	8.4[2]	12.9

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.5 feet
[3]Maximum 1-percent annual chance wave runup elevation
[4]Maximum 1-percent annual chance wave elevation due to wave reflection

TABLE 6 - TRANSECT DESCRIPTIONS - continued

TRANSECT	LOCATION	ELEVATION (feet local datum) 1-PERCENT ANNUAL CHANCE STILLWATER	MAXIMUM 1-PERCENT ANNUAL CHANCE WAVE CREST[1]
	ISLAND OF ST. THOMAS - continued		
T63	Out to Caribbean Sea, across Runnel Bay, approximately 0.94 mile southeast of the intersection Route 311 and Route 30 (Fortuna Road), at N 18.34306°, W 65.00970	4.7	25.0[4]
T64	Out to Caribbean Sea, across Fortuna Bay, West of Krabbepan Point, approximately 0.70 mile southwest of the intersection of Route 311 and Route 30 (Fortuna Road), at N 18.34289°, W 65.02121°	4.7	13.0[5]
T65	Out into Caribbean Sea, across Barents Bay, approximately 0.97 mile southwest of the intersection of Route 311 and Route 30 (Fortuna Road) N 18.34543°, W 65.03170°	4.0	25.0[4]
T66	On Water Island at Ruyter Bay across West Gregerie Channel, approximately 1,720 feet southwest of Banana Point, at N 18.33°, W 64.95°	3.5	7.0
T67	On Water Island across East Gregerie Channel, approximately 715 feet south of Banana Point, at N 18.33°, W 64.94°	4.2	7.0
T68	On Water Island at Sprat Bay, approximately 1,020 feet northeast of Carol Point, at N 18.32°, W 64.95°	8.7[2]	13.4
T69	On Water Island, out to the Caribbean Sea at Flamingo Point, at N 18.31°, W 64.96°	4.1	25.0[4]
T70	On Water Island, out to the Caribbean Sea, across Druyf Bay, approximately 975 feet southeast of Providence Point, at N 18.32°, W 64.96°	7.2[3]	11.1

[1]Because of map scale limits, maximum wave elevation may no be shown on the FIRM
[2]Includes wave setup of 3.2 feet
[3]Includes wave setup of 3.5 feet
[4]Maximum 1-percent annual chance wave elevation due to wave reflection
[5]Maximum 1-percent annual chance wave runup elevation

TABLE 7 - TRANSECT DATA

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
				ISLAND OF ST. CROIX			
Caribbean Sea	C1	3	4.1	7.9[1]	5.5	VE	10-12
		3	4.1	4.4	5.5	VE	9[4]
						AE	9[4]
	C2	2.6	3.7	7.7[1]	5.3	VE	11-12
		2.6	3.7	4.2	5.3	VE	10[4]
						AE	10[4]
	C3	2.7	3.7	7.5[1]	5.0	VE	10-12
						AE	8-10
	C4	2.6	3.5	7.4[1]	4.8	VE	10-11
						AE	7-9
	C5	2.8	3.8	7.6[1]	5.1	VE	12
		2.8	3.8	4.1	5.1	VE	11[4]
						AE	11[4]
	C6	2.9	4.0	7.9[1]	5.5	VE	12
		2.9	4.0	4.4	5.5	VE	11[4]
						AE	11[4]
	C7	2.9	3.7	7.4[2]	4.9	VE	9-11
						AE	7-9
	C8	2.8	3.8	7.5[2]	5.2	VE	10-12
		2.8	3.8	4.2	5.2	VE	9[4]
						AE	9[4]
	C9	3.8	5.2	9.1[2]	7.2	VE	11-14
						AE	9-11
	C10	3.8	5.2	10.4[3]	7.3	VE	13-16
						AE	10-12
	C11	4.5	5.9	11.2[3]	8.2	VE	13-17
						AE	11-13
	C12	5	7.3	12.6[3]	10.3	VE	15-19
						AE	13-15
	C13	4.4	6.4	11.8[3]	9.3	VE	14-18
						AE	12-14

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 3.3 feet
[3]Includes wave setup of 4.5 feet
[4]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. CROIX - continued					
Caribbean Sea (continued)	C14	3.4	4.7	7.8[1]	6.5	VE	10-12
						AE	8-11
	C15	2.6	3.8	7.1[1,2]	5.7	VE	9-11
						AE	7-9
	C16	3.6	5.2	8.6[1,2]	7.6	VE	11-13
						AE	9-11
	C17	3.9	5.5	8.8[1,2]	7.8	VE	11-14
						AE	9-11
	C18	3.7	5.3	9.0[3]	7.7	VE	11-14
						AE	9-11
	C19	4	5.7	9.5[3]	8.3	VE	12-15
						AE	10-12
	C20	4.1	6.0	9.8[3]	8.8	VE	12-15
						AE	10-12
	C21	3.7	6.1	10.0[3]	9.5	VE	12-15
						AE	10-12
	C22	3.9	5.8	9.7[4]	8.4	VE	12-15
		3.9	5.8	6.5	8.4	VE	11[6]
						AE	11[6]
	C23	2.9	4.1	7.9[4]	5.9	VE	10-12
						AE	8-10
	C24	3.5	4.8	8.4[4]	6.5	VE	11-13
						AE	8-10
	C25	4.4	6.3	10.1[5]	8.9	VE	12-15
						AE	10-12

[1]Includes wave setup of 2.6 feet
[2]Includes wave setup of 4.5 feet
[3]Includes wave setup of 2.9 feet
[4]Includes wave setup of 3.2 feet
[5]Includes wave setup of 3.1 feet
[6]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
			ISLAND OF ST. CROIX - continued				
Caribbean Sea (continued)	C26	3.3	4.5	7.7[1]	6.2	VE	10-12
						AE	8-10
	C27	3	4.2	7.3[1]	5.8	VE	9-11
						AE	7-9
	C28	4	5.6	9.0[1]	7.9	VE	11-12
						AE	10-12
	C29	5	7.7	11.5[1]	11.5	VE	15-18
		5	7.7	8.8	11.5	VE	14[3]
						AE	14[3]
	C30	2.9	3.9	7.0[2]	5.4	VE	9-11
						AE	7-9
	C31	3.8	5.5	8.8[2]	7.9	VE	11-14
						AE	9-11
	C32	3.3	5.1	8.4[2]	7.6	VE	11-13
						AE	8-10
	C33	3.8	5.6	9.0[2]	8.2	VE	11-14
						AE	9-11
	C34	2.9	4.5	7.8[2]	6.8	VE	12-12
						AE	10-12
	C35	3.6	5.3	8.6[2]	7.7	VE	11-13
						AE	9-11
	C36	3.8	6.0	9.6[2]	9.2	VE	12-15
						AE	10-12
	C37	4	6.3	9.7[2]	9.3	VE	12-15
						AE	10-12
	C38	3.9	6.7	10.4[2]	10.6	VE	13-16
						AE	10-12

[1]Includes wave setup of 2.7 feet
[2]Includes wave setup of 2.6 feet
[3]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
			ISLAND OF ST. CROIX - continued				
Caribbean Sea (continued)	C39	4.2	7.2	11.0[1]	11.4	VE	13-17
						AE	11-13
	C40	4.5	8.0	11.8[1]	12.6	VE	14-18
						AE	12-14
	C41	2.9	4.5	8.4[2]	6.7	VE	11-13
						AE	8-10
	C42	3.3	5.7	9.8[2]	8.8	VE	12-15
						AE	10-12
	C 43	2.9	4.9	8.9[2]	7.6	VE	11[4]-14
		2.9	4.9	5.6	7.6	VE	11[4]
						AE	9-11
	C44	2.7	4.3	5.0	6.6	VE	17[4]
						AE	17[4]
	C45	2.9	4.0	7.8[2]	5.6	VE	-12
		2.9	4.0	4.5	5.6	VE	11[4]
						AE	11[4]
	C46	2.8	4.4	8.3[2]	6.6	VE	10-13
						AE	8-10
	C47	2.9	4.6	8.5[2]	6.9	VE	11-13
		2.9	4.6	5.2	6.9	VE	10[4]
						AE	10[4]
	C48	2.9	4.6	8.7[2]	7.1	VE	11-13
						AE	9-11
	C49	2.8	4.2	8.1[2]	6.2	VE	10-12
						AE	8-9
		2.8	4.2	4.8	6.2	VE	9[4]
	C50	2.7	3.8	4.2	5.3	VE	14[4]
						AE	14[4]
	C51	2.9	4.0	7.9[3]	5.5	VE	12[4]
						AE	12[4]

[1]Includes wave setup of 2.6 feet
[2]Includes wave setup of 3.3 feet
[3]Includes wave setup of 3.5 feet
[4]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
			ISLAND OF ST. JOHN				
Pillsbury Sound	J1	2.2	3.3	3.8	4.9	VE	25[4]
	J2	2.7	4.1	8.2[1]	6.1	VE AE	10-13 5-10
	J3	2.6	3.9	4.5	5.8	VE	25[4]
	J4	2.3	3.3	6.2[2]	4.8	VE AE	8-9 6-8
	J5	2.5	3.6	4.2	5.3	VE	25[4]
	J6	2.6	3.9	6.9[3]	5.8	VE AE	10-11 7-10
		2.6	3.9	4.5	5.8	VE	10[5]
	J7	2.2	3.2	3.7	4.7	VE AE	8[5] 8[5]
	J8	1.9	2.8	3.1	4	VE AE	7[5] 7[5]
	J9	1.9	2.8	3.8[3]	4	VE AE	6 6
	J10	2	2.9	4.1[3]	4.3	VE AE	6 5-6
	J11	1.9	2.8	3.9[3]	4.1	VE AE	6 6
	J12	2.5	4.2	4.9 5.6[3]	6.6	VE AE	9[5] 6-9

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 2.4 feet
[3]Includes wave setup of 0.7 feet
[4]Wave reflection elevation
[5]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. JOHN - continued					
Atlantic Ocean	J13	3.3	6.2	7.3	10.2	VE	25[4]
	J14	3.7	6.3	7.4	10	VE	17[5]
						AE	17[5]
	J15	3.7	6.3	10.9[1]	10	VE	15-17
						AE	11-14
		3.7	6.3	7.4	10	VE	14[5]
	J16	3.6	6.2	7.1	9.6	VE	17[5]
						AE	17[5]
	J17	3.6	6.1	9.6[2]	9.6	VE	12-15
						AE	10-12
	J18	2.9	5.0	5.9	8	VE	14[5]
						AE	14[5]
	J19	3.3	5.7	7.2[3]	9.1	VE	9-10
						AE	7-9
	J20	3.1	5.1	6.0	8	VE	12[5]
						AE	12[5]
	J21	2.7	4.8	5.6	7.7	VE	14[5]
						AE	14[5]
	J22	2.6	4.6	5.3	7.3	VE	10[5]
						AE	10[5]
	J23	2.6	4.1	4.8	6.3	VE	25[4]
	J24	2.3	3.1	3.5	4.3	VE	25[4]
	J25	2	3.0	3.4	4.4	VE	25[4]

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 2.5 feet
[3]Includes wave setup of 0.5 feet
[4]Wave reflection elevation
[5]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. JOHN - continued					
Caribbean Sea	J26	2	3.1	7.1[1]	4.7	VE	9-11
						AE	7-9
	J27	2.1	3.2	3.8	4.9	VE	25[3]
	J28	2.1	3.3	3.8	5	VE	14[4]
						AE	11-14
	J29	2.3	3.4	3.9	5	VE	13[4]
						AE	9-13
	J30	2.6	4	4.6	6	VE	13[4]
						AE	13[4]
	J31	2.9	4.3	8.2[2]	6.4	VE	9[4]-14
						AE	9
	J32	2.7	4.0	4.7	6	VE	13[4]
						AE	8-13
	J33	3.5	5.2	9.2[2]	7.7	VE	11-14
						AE	9-11
	J34	3.5	5.2	9.2[2]	7.7	VE	11-14
						AE	9-11
	J35	3.2	4.7	8.6[2]	6.9	VE	13
		3.2	4.7	5.4	6.9	VE	12[4]
						AE	12[4]
	J36	2.5	3.8	7.6[2]	5.7	VE	10-12
						AE	8-10
	J37	2.4	3.8	7.9[1]	5.8	VE	10-12
						AE	8-10

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 3.2 feet
[3]Wave reflection elevation
[4]Wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
				ISLAND OF ST. JOHN - continued			
Caribbean Sea (continued)	J38	2.3	3.5	4.1	5.4	VE	15[3]
				7.6[1]		AE	8-15
	J39	2	3.1	7.1[1]	4.7	VE	9-11
						AE	7-9
	J40	2.4	3.7	7.8[1]	5.6	VE	10-12
						AE	8-10
	J41	2.2	3.4	3.9	5.1	VE	25[4]
	J42	2.6	4.1	8.3[1]	6.3	VE	10-13
						AE	8-10
	J43	2.4	3.7	7.7[1]	5.5	VE	12
		2.4	3.7	4.2	5.5	VE	11[3]
						AE	11
	J44	3.2	4.8	8.8[2]	7	VE	11-14
						AE	9-11
	J45	2.5	3.7	7.6[2]	5.4	VE	11-12
		2.5	3.7	7.6[2]	5.4	VE	10[3]
						AE	10[3]
	J46	2.3	3.5	4.0	5.2	VE	11[3]
						AE	11[3]

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 3.4 feet
[3]Wave runup elevation
[4]Wave reflection elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
				ISLAND OF ST. THOMAS			
Atlantic Ocean	T1	2.4	3.5	3.9	4.2	VE	26[2]
						AE	26[2]
	T2	2.6	4.4	5.2	7	VE	16[2]
						AE	16[2]
	T3	2.6	4.3	5.0	6.7	VE	25[3]
	T4	2.6	4.5	8.8[1]	7.2	VE	11-14
		2.6	4.5	5.3	7.2	VE	10[2]
						AE	10[2]
	T5	2.6	4.6	5.4	7.3	VE	25[3]
	T6	2.7	4.7	9.0[1]	7.5	VE	12-14
		2.7	4.7	5.5	7.5	VE	11[2]
						AE	11[2]
	T7	2.7	4.7	9.0[1]	7.5	VE	12-14
		2.7	4.7	5.5	7.5	VE	11[2]
						AE	11[2]
	T8	2.4	4.3	5.1	7	VE	19[2]
						AE	19[2]
	T9	2.8	5.1	9.6[1]	8.4	VE	12-15
						AE	12
	T10	2.9	5.3	9.8[1]	8.7	VE	12-15
						AE	10-12
	T11	2.9	5.3	6.3	8.7	VE	25[3]
	T12	3.1	5.6	10.1[1]	9.1	VE	13-15
						AE	11-13

[1]Includes wave setup of 3.5 feet
[2]Maximum 100-year wave runup elevation
[3]Maximum 100-year wave elevation due to wave reflection

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. THOMAS - continued					
Atlantic Ocean (continued)	T13	2.8	4.9	9.3[1]	7.9	VE AE	11-15 9-11
	T14	2.8	5.1	5.9	8.1	VE	25[3]
	T15	3.3	5.5	6.5	8.6	VE	25[3]
	T16	3.4	5.7	10.3[1]	9.1	VE AE	14-16 11-13
	T17	3.4	5.8	6.9	9.3	VE	25[3]
	T18	3.5	5.9	7.0	9.4	VE AE	21[4] 21[4]
	T19	3.5	5.6	6.5	8.6	VE	25[3]
Pillsbury Sound	T20	3	4.9	5.7	7.6	VE AE	23[4] 23[4]
	T21	3.5	5.4	6.8[2]	8.1	VE AE	9-10 8
	T22	3.4	5.4	6.2	8.2	VE AE	22[4] 22[4]
	T23	3.3	5.3	6.2	8.2	VE AE	11[4] 10-11[4]
	T24	3.3	5.3	6.2	8.2	VE AE	19[4] 19[4]
	T25	3.2	4.8	6.2[2]	7.2	VE AE	8-9 6-8

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 0.6 feet
[3]Maximum 100-year wave elevation due to wave reflection
[4]Maximum 100-year wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. THOMAS - continued					
Pillsbury Sound (continued)	T26	3.1	4.6	6.0[1]	6.9	VE	8-9
						AE	6-8
	T27	3.1	4.6	5.4	6.9	VE	9[3]
						AE	9[3]
	T28	4.1	5.8	7.2[1]	8.3	VE	9-10
		4.1	5.8	6.6	8.3	VE	8[3]
						AE	8[3]
	T29	4.6	6.5	7.9[1]	9.2	VE	10-12
		4.6	6.5	7.3	9.2	VE	9[3]
						AE	9[3]
	T30	3.4	5.2	6.6[1]	7.8	VE	9-10
						AE	7-9
	T31	2.6	3.8	4.3	5.5	VE	19[3]
						AE	19[3]
	T32	2.9	4.3	4.9	6.3	VE	11[3]
						AE	11[3]
	T33	3.2	4.7	5.3	6.8	VE	10[3]
						AE	10[3]
	T34	3	4.2	4.7	5.9	VE	13[3]
						AE	6-13[3]
	T35	2.9	4.1	4.7	5.9	VE	14[3]
						AE	14[3]
	T36	2.9	4.1	7.7[2]	5.9	VE	10-12
						AE	8-10

[1]Includes wave setup of 0.6 feet
[2]Includes wave setup of 3.1 feet
[3]Maximum 100-year wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
				ISLAND OF ST. THOMAS - continued			
Caribbean Sea	T37	2.9	4.2	4.7	6	VE	18[4]
						AE	18[4]
	T38	3.1	4.5	8.1[1]	6.4	VE	12
		3.1	4.5	5	6.4	VE	11[4]
						AE	11[4]
	T39	3.6	5.2	8.9[1]	7.4	VE	11-14
						AE	9-11
	T40	4.2	6.1	7.7	8.8	VE	10-11
						AE	9-10
				6.9		AE	7-8
	T41	4.8	6.7	8.4[2]	9.5	VE	10-13
				7.1		AE	7-10
				7.6		AE	8
	T42	5.6	8.0	9.1	11.5	AE	9-11
	T43	6.4	9.3	7.1[3]	13.4	VE	10-11
						AE	8-10
				10.5		AE	11-12
	T44	3.9	5.5	8.6[2]	7.8	VE	11-13
						AE	7-11
		3.9	5.5	6.2	7.8	AE	6
	T45	3.6	5.1	6.2[3]	7.3	VE	10-11
						AE	6-9
	T46	2.2	3.3	3.8	4.9	VE	11[4]
						AE	11[4]

[1]Includes wave setup of 3.1 feet
[2]Includes wave setup of 3.4 feet
[3]Includes wave setup of 0.4 feet
[4]Maximum 100-year wave runup elevation

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. THOMAS - continued					
Caribbean Sea (continued)	T47	2.6	3.9	4.4	5.7	VE	14[3]
						AE	14[3]
	T48	3.2	4.8	8.6[1]	7	VE	11-13
						AE	9-11
	T49	2.1	3.0	6.6[1]	4.3	VE	9-10
						AE	7-9
	T50	2.6	3.8	7.4[1]	5.4	VE	10-11
						AE	7-9
	T51	2.9	4.3	8.0[1]	6.2	VE	12
		2.9	4.3	4.8	6.2	VE	11[3]
						AE	11[3]
	T52	3.1	4.5	5.1	6.5	VE	7[3]
						AE	7[3]
	T53	3.1	4.5	5.1	6.5	VE	6[3]-7
						AE	6[3]
	T54	3.6	5.3	6	7.7	VE	7[3]-9
		3.6	5.3	6	7.7	AE	7[3]
	T55	2.9	4.1	4.5	5.7	VE	7
				4.5		AE	5-7
	T56	2.3	3.4	3.8	4.9	VE	9[3]
						AE	9[3]
	T57	2.1	3.3	3.7	4.9	VE	25[4]
	T58	2.8	4.3	8.3[2]	6.3	VE	10-13
						AE	8-10

[1]Includes wave setup of 3.2 feet
[2]Includes wave setup of 3.5 feet
[3]Maximum 100-year wave runup elevation
[4]Maximum 100-year wave elevation due to wave reflection

TABLE 7 - TRANSECT DATA - continued

FLOODING SOURCE	TRANSECT	STILLWATER ELEVATION (feet local datum) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT	ZONE	BASE FLOOD ELEVATION (feet local datum)
		ISLAND OF ST. THOMAS - continued					
Caribbean Sea (continued)	T59	2.7	4.1	4.7	6.1	VE	18[3]
						AE	18[3]
	T60	2.3	3.6	7.6[1]	5.4	VE	10-12
						AE	8-10
	T61	2.7	3.7	7.7[1]	5.2	VE	11-12
		2.7	3.7	4.2	5.2	VE	10[3]
						AE	10[3]
	T62	3.0	4.3	8.4[1]	6.2	VE	10-13
						AE	8
		3.0	4.3	4.9	6.2	VE	9[3]
						AE	9[3]
	T63	2.9	4.1	4.7	5.9	VE	25[4]
	T64	3	4.2	4.7	5.9	VE	13[3]
						AE	13[3]
	T65	2.5	3.6	4	5.1	VE	25[4]
	T66	1.9	3.1	3.5	4.7	VE	4[3]-7
						AE	4[3]
	T67	2.4	3.7	4.2	5.5	VE	7[3]
						AE	7[3]
	T68	3.4	4.9	8.7[2]	7	VE	10-13
						AE	9-10
	T69	2.5	3.6	4.1	5.3	VE	25[4]
	T70	2.2	3.3	7.2[1]	4.8	VE	9-11
						AE	7-9

[1]Includes wave setup of 3.5 feet
[2]Includes wave setup of 3.2 feet
[3]Maximum 100-year wave runup elevation
[4]Maximum 100-year wave elevation due to wave reflection

3.4 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

Flood Elevations on this map are referenced to local tidal datum defined by the National Ocean Service (NOS) and determined by the Army Corps of Engineers (1995). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding the calculation of local tidal datum, contact the U.S. Army Corps of Engineers, Jacksonville District, (904) 232-2234, http://www.saj.usace.army.mil/.

The bench marks used in this FIS utilize existing National Oceanic & Atmospheric Administration's National Geodetic Survey's (NGS) control points. For this study, these Permanent Identifier (PID) points have been reassigned a local tidal datum. The PIDs, descriptions, and local tidal elevations are found in Table 8.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent annual chance flood elevations; delineations of the 1- and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 1- and 0.2-percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at scales of 1:12,000, 1:24,000, and 1"=50', with contour intervals of 20, 40, and 2 feet, respectively (Black, Crow, and Eidsness, Inc., Engineers, 1976, U.S. Department of the Interior, 1954, and Southern Resource Mapping Corporation, 1985).

TABLE 8 – BENCH MARKS

NGS PID	FIRM Panel	Elevation (feet local tidal datum)	Coordinates	Description
TV0499	0014	6.3336	18° 20' 57.72760" -64° 51' 45.66657"	Station is located on the north shore of St. Thomas, opposite Thatch Cay. It is on the outermost point of Coki Point. Station is marked by a standard brass disk cemented in a drill hole in a depression of weather worn rock. Coki point is a low wooded point with rocky ledges making out from the wooded part to the water line. A small portion of Hans Lollik just shows inside the westernmost end of Thatch Cay, a white house just below the highest hill on Thatch Cay bears 54 deg (prismatic compass). Turtle Back Rock bears 125 deg (prismatic compass). A white house on the Hill, just over Smiths Bay, bears 160 deg (prismatic compass). The station is about 7 feet above the high water. A standard reference disk was cemented in a drill hole in a piece of slanting bedrock nearby.
TV0490	0030	5.3176	18° 19' 29.84780" -64° 49' 54.30251"	Station is situated on the innermost of the flat-topped rocks off Cabrite Point. This rock is separated from the main point by a shallow strip of water about 5 meters wide. Station is marked by a standard brass disk cemented in a crack and depression of the rock. Projecting cliff of the point is 11.0 meters distant from the station.
TV1539	0029	553.9399	18° 19' 42.35500" -64° 51' 32.9174"	The station is located on St. Thomas in the U.S. Virgin Islands near the eastern end of the island in the red hook district at the top of Benner Hill on the grounds of the Benner Estate. To reach from Charlotte Amalie go east on Highway 30 past Havensight, Frenchmans Bay, Bolongo Bay and Bovoni to a "T" intersection in the village of Nadir. At this point turn right on Highway 32 and proceed about 1.4 mi (2.3 km) to a cross roads and a traffic light in the village of Benner, turn left and go north for 0.6 mi (1.0 km) to a point where the main road makes a zig-zag right and a continuing dirt road to the right, take the dirt road to a gate, pass through the gate and follow the dim gravel and dirt road to the top of the hill and a

TABLE 8 – BENCH MARKS - continued

NGS PID	FIRM Panel	Elevation (feet local tidal datum)	Coordinates	Description
				concrete bunker about 20 ft (6.1 m) high with the station in the top center of the highest part of the bunker. The station mark is a bronze disk with a triangle enclosed centerpunch embossed with the letters "Cadastral Survey No." The designation of the station is 97
TV1537	0041	8.2473	18° 19' 49.82794" -64° 55' 34.08566"	The station is located on St. Thomas island in the U.S. Virgin Islands near the south central part of the island along the shore of and at the southeast corner of the city of Charlotte Amalie in the vicinity of Havensight Point on the west Indian Company Docks (cruise ships) at the western end of a pier which extends into St. Thomas Harbor from Havensight Point. Reach the station from Charlotte Amalie by traveling east on Veterans Drive (Highway 30) to the Havensight Mall at the east edge of town, turn right into the Havensight Mall complex and head south and west to the head of the pier thence continue southwest on the pier to the end and the station on the right near the northwest corner of the pier. The station mark is an NOS bronze disk cemented into a drill hole in the concrete surface of the pier, it is, 75.94 ft (23.15 m) northwest of the southeast edge of the pier, 9.35 ft (2.85 m) east of the westernmost edge of the pier, 6.47 ft (1.97 m) east of a 10 cm diameter steel navigational light standard, 4.75 ft (1.45 m) southeast of the northwest edge of the pier and 3.85 1.17 m) west of the west leg of a guard rail stanchion.
TV1538	0040	270.2021	18° 19' 38.92874" -64° 57' 50.29425"	The station is located on St. Thomas in the U.S. Virgin Islands on the south side of the island about 1.5 mi (2.4 km) southwest of Charlotte Amalie atop Grambokola Hill. Reached from Charlotte Amalie. Go west on the Moravian Highway to the airport access road on the left. Turn left on the airport access road and proceed southwest for 0.15 mi (0.24 km) to a fork road left. Turn left and go south bearing right at all forks for 0.6 mi

TABLE 8 – BENCH MARKS - continued

NGS PID	FIRM Panel	Elevation (feet local tidal datum)	Coordinates	Description
				(1.0 km) to a gate. Passage through the gate may be coordinated through the Federal Aviation Administration at the north side of the St. Thomas Airport. Pass through the gate and proceed up the hill for 0.2 mi (0.3 km) to the second road on the left, turn left and proceed uphill for 0.15 mi (0.24 km) to the point where the pavement ends, thence bear right on a dim track road up the hill for 0.15 mi (0.24 km) to the top of the hill and the station. The station mark is an unstamped U.S. Coast and Geodetic Survey brass disk (NGS) which is set in a mass of concrete atop a partially exposed boulder. The disk is canted at an angle and is not level. There is writing in the concrete of the monument stating that the mark was reset on 12-21-89 by AM. The station is on the highest part of the hill north of an elevated square concrete cistern. There is an unstamped reference mark set in a drill hole in a rock outcropping 4.5 meters (14.8 ft) northeast of the station. The mark is 5.165 meters (16.946 ft) East-northeast of the airport beacon.
TV0474	0032	159.6254	18° 21' 05.05049" -64° 46' 38.87017"	Station is Old Stone Sugar Fan Mill on knoll just west of Denis Bay House.
TV0441	0050	5.0619	18° 19' 49.80728" -64° 42' 00.83411"	Station is on top of an 8-by 3-by 2-meter rock 2 meters off shore from Lagoon Point. This point extends out from about the middle of the western side of coral bay. The point is surrounded by a large reef. The sandpit at hermitage is in range with hermitage estate house. Station is marked by a standard brass triangulation disk cemented into a drill hole. Station is about 6 feet above high water.

TABLE 8 – BENCH MARKS - continued

NGS PID	FIRM Panel	Elevation (feet local tidal datum)	Coordinates	Description
TV0471	0048	144.0636	18° 18' 40.72600" -64° 45' 57.72699	Station is situated on the top of Dittless Point that runs out between Rendezvous Bay and Fish Bay on the south shore of St. John. The station is about 8 meters north of the highest part of point and is 5 meters west of the edge of the cliff forming prominent bight in the east part of the point. Station is marked by a regulation brass disk cemented in a crack of a rock outcropping 8 inches.
TV0477	0047	724.3921	18° 20' 13.41491" -64° 47' 12.80142"	Station is on John Solomon Hill, formerly called Canoe Hill, on the extreme northwestern end of St. John. This hill rises southward from K. C. Bay. This station is marked by a round-headed copper bolt cemented in a drill hole in flat boulder on top of the hill. A U.S. Coast and Geodetic Survey brass disk (NGS) witness disk is approximately 8 meters to west of the mark. A wood platform on stone columns is approximately 2.5 meters north-northwest of mark.
TV0081	0060	91.1651	17° 46' 55.51167" -64° 44' 54.50107"	The station is located on Salt Point, just south of Salt River Bay. To reach from Fort Christiansvaern, in Christiansted go southwest on one way street for 0.6 km (0.35 mi) to a cross street turn right and go one block to a cross street, turn left and go southwest then west for 0.6 km (0.35 mi) to a crossroad. At stoplight, go straight, westerly, for 1.0 km (0.6 mi) to a side road right at stoplight, turn right and go north for 2.7 km (1.7 mi) to a side road right. Turn right and go north for 1.9 km (1.2 mi) to a crossroad. Turn right and go east for 0.2 km (0.1 mi) to a crossroad, turn left and go north on main road for 0.6 km (0.4 mi) to a rock and gravel barricade across road and station on plateau above and on the left. The property owner of house on right just before reaching station was pretty emphatic about not crossing the barricade with a vehicle. The station is a standard NOS disk stamped---Salt 2 1980---, cemented in an irregular mass of

TABLE 8 – BENCH MARKS - continued

NGS PID	FIRM Panel	Elevation (feet local tidal datum)	Coordinates	Description
				concrete, flush. It is located, 2.9 meters (9.5 ft) south from the north edge of plateau, 5.7 meters (18.6 ft) west from the east edge of plateau and 4.7 meters (15.4 ft) east from the west edge of plateau. Height of light shown was 1.5 meters.
TV0061	0073	7.3975	17° 45' 56.80331" -64° 39' 19.12717"	Station is on the highest part of the detached rock off Pull Point. This is the prominent point of the north shore line just east of Green Cay and north of Green Cay Estate. Station is about 5 feet above high water. Green Cay Point and Shoys Point are almost on range. Station is marked by a standard brass triangulation disk cemented in a drill hole.
TV0044	0075	20.9789	17° 45' 39.23530" -64° 36"43.12237"	Station located on the easternmost of the two points, that extend out west of Tague Bay, north side of St. Croix. The station is on a large flat-topped rock on the outermost part of the point. To the east of the station the shore line recedes to form Tague Bay. Station dry is almost on range with the highest part of Green Cay. Station is marked by a standard brass triangulation disk cemented in drill hole in crevice of the rock.
TV1505	0086	44.2908	17° 43' 59.01322" -64° 36' 36.74957"	The station is located on Grass Point on the west side of Grapetree Bay, on the southeast side of St. Croix. To reach from the Grapetree Beach Hotel on the west so side of Grapetree Bay go southwest for 1.0 km (0.6 mi) to a sharp curve, ett for station penthany, continue around curve for 0.3 km (0.2 mi) to a reverse fork left. Turn left and go southerly for 0.5 km (0.3 mi) to top of hill and station. The station is a NOS brass disk stamped---Pentheny AZ MK---, cemented in concrete in solid rock. It is located, 7.0 meters (23.0 ft) north from south edge of cliff, 14.0 meters (46.0 ft) west from east edge of cliff 28.0 meters (92.0 ft) east from west edge of cliff. Height of light shown was 1.6 meters.

For areas subject to shallow flooding in and around Charlotte Amalie, on the island of St. Thomas, the boundaries of the 1-percent annual chance flood have been delineated using topographic maps, contained in the USACE Flood Plain Information report, at a scale of 1:6,000 with a contour interval of 40 feet, and topographic maps at a scale of 1:12,000 with a contour interval of 20 feet (USACE, 1975 and Black, Crow, and Eidsness, Inc., Engineers, 1976).

For areas of detailed coastal study the floodplain boundaries were delineated with 2-foot contour topographic data obtained from aerial imagery collected by the Jacksonville District, USACE, in 1994.

The 1-percent annual chance shallow flood boundary corresponds to the boundary of flood hazard zones where average depths of inundation are between 1 and 3 feet (Zone AO).

For the streams studied by approximate methods, the 1-percent annual chance floodplain boundaries were redelineated from the delineation shown on the previously printed Flood Insurance Study for the U.S. Virgin Islands, Islands of St. Croix, St. John, and St. Thomas (FEMA, 1980, Flood Insurance Study, U.S. Virgin Islands, Island of St. Croix, FEMA, 1980, Flood Insurance Study, U.S. Virgin Islands, Island of St. John, and FEMA, 1993).

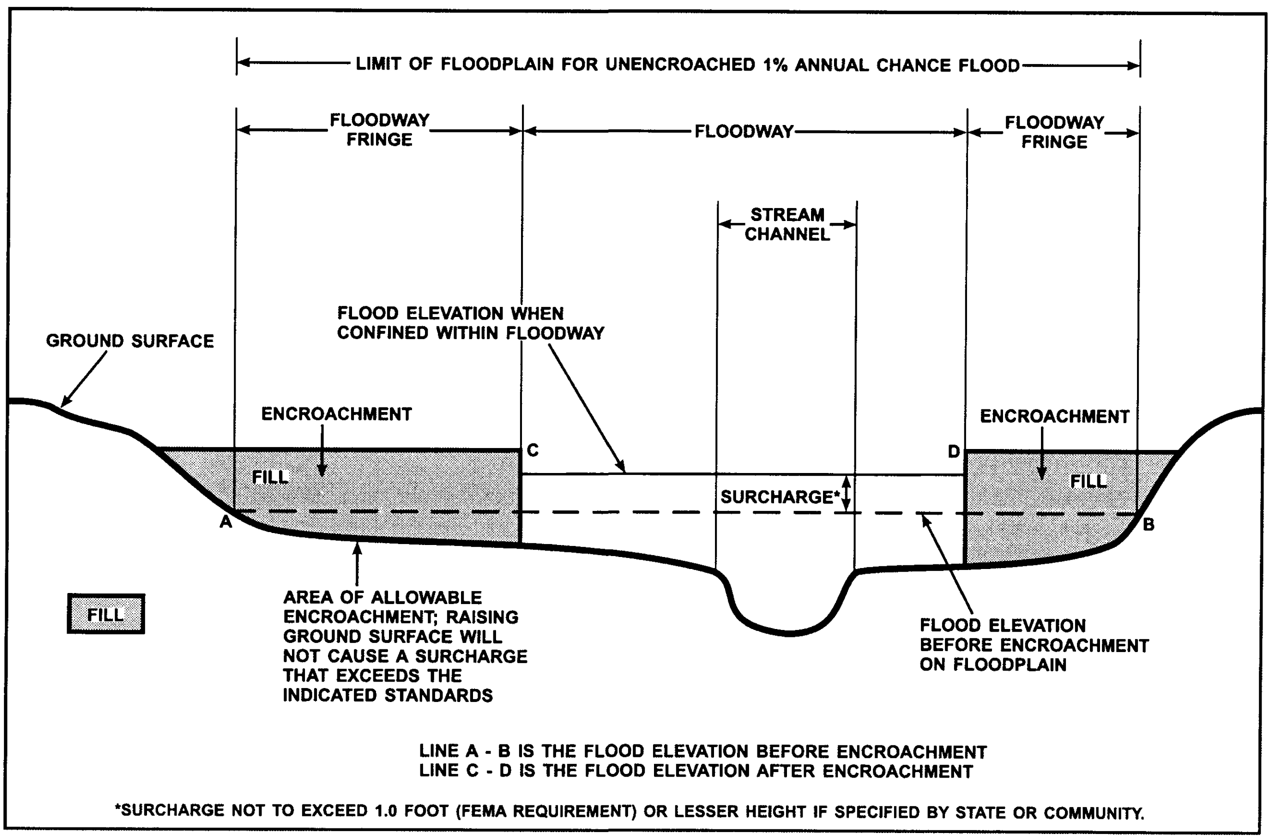
The 1- and 0.2-percent annual chance floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AO, and VE), and the 0.2-percent annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodway in this study is presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 8, "Floodway Data." To reduce the risk of property damage in areas where the stream velocities are high, the city may wish to restrict development in areas outside the floodway.

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 6, "Floodway Schematic".



FLOODWAY SCHEMATIC Figure 6

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gut No. 1								
A	200	160	504	3.3	6.7	6.0[2]	7.0	1.0
B	570	50	192	8.7	14.2	14.2	14.3	0.1
C	780	60	170	9.8	19.4	19.4	19.4	0.0
D	860	55	470	3.6	26.2	26.2	26.2	0.0
E	900	95	496	3.4	26.2	26.2	26.2	0.0
F	980	82	476	3.5	28.9	28.9	28.9	0.0
G	1,050	75	433	3.9	28.9	28.9	28.9	0.0
H	1,230	200	1,162	1.4	37.7	37.7	37.7	0.0
I	1,650	104	207	8.1	41.4	41.4	41.4	0.0
J	2,050	55	168	9.9	52.2	52.2	52.2	0.0
K	2,500	156	261	6.4	66.8	66.8	66.8	0.0
L	2,850	81	190	8.8	79.9	79.9	79.9	0.0
Gut No. 2								
A	100	336	1,523	1.2	8.1	6.0[2]	7.0	1.0
B	223	393	1,674	1.1	8.1	6.1[2]	7.1	1.0
C	300	175	690	2.7	8.1	6.1[2]	7.1	1.0
D	470	134	511	3.6	8.1	6.3[2]	7.2	0.9
E	630	260	531	3.5	8.3	8.3	8.5	0.2
F	760	74	261	7.1	11.0	11.0	11.8	0.8
G	1,000	90	297	6.2	13.1	13.1	13.7	0.6
H	1,105	220	479	3.9	14.7	14.7	15.3	0.6
I	1,445	37	156	11.9	21.2	21.2	21.5	0.3

[1] Feet above mouth
[2] Elevation computed without consideration of backwater effects from Caribbean Sea

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,
ISLAND OF ST. CROIX

FLOODWAY DATA

GUT NO. 1 – GUT NO. 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gut No. 2 (continued)								
J	2,000	95	260	7.1	32.1	32.1	32.6	0.5
K	2,273	85	309	6.0	45.8	45.8	46.6	0.8
Gut No. 3								
A	80	726	3,441	0.7	11.8	6.0[2]	7.0	1.0
B	270	548	1,927	1.2	11.8	6.0[2]	7.0	1.0
C	575	530	644	3.7	11.8	6.9[2]	7.6	0.7
D	825	318	556	4.3	11.8	11.4	12.4	1.0
E	930	303	690	3.5	13.5	13.5	14.5	1.0
F	1,160	133	501	4.8	20.7	20.7	21.4	0.7
G	1,800	48	203	11.8	34.0	34.0	34.0	0.0
H	2,400	57	251	9.6	45.2	45.2	45.9	0.7
I	2,840	39	190	12.6	55.6	55.6	55.6	0.0
J	3,570	93	830	2.9	81.6	81.6	82.6	1.0
K	4,100	70	608	3.9	84.7	84.7	85.6	0.9
Gut No. 4								
A	100	300	1,735	1.1	11.8	6.0[2]	7.0	1.0
B	450	200	1,045	1.8	11.8	6.0[2]	7.0	1.0
C	860	200	408	4.6	11.8	6.6[2]	7.3	0.7
D	1,000	200	772	2.4	11.8	11.2	11.2	0.0
E	1,445	200	461	4.0	16.9	16.9	17.5	0.6
F	1,770	197	545	3.4	22.8	22.8	22.9	0.1

[1] Feet above mouth
[2] Elevation computed without consideration of backwater effects from Caribbean Sea

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX

FLOODWAY DATA

GUT NO. 2 – GUT NO. 4

TABLE 9

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gut No. 4 (continued)								
G	1,900	83	261	7.1	27.2	27.2	28.0	0.8
H	2,300	140	304	6.1	32.1	32.1	32.5	0.4
I	2,910	130	238	7.8	44.5	44.5	44.5	0.0
J	2,960	240	540	3.4	50.6	50.6	50.7	0.1
K	3,180	200	439	4.2	51.8	51.8	52.2	0.4
L	3,750	151	293	6.4	59.9	59.9	59.9	0.0
M	4,030	70	211	8.8	65.3	65.3	65.9	0.6
Gut No. 5								
A	200	142	544	7.1	9.7	6.0[2]	7.0	1.0
B	560	244	787	4.9	9.7	8.7	8.7	0.0
C	915	82	531	11.8	11.4	11.4	11.4	0.0
D	1,500	60	322	12.1	16.6	16.6	16.6	0.0
E	2,590	66	360	11.1	23.4	23.4	24.0	0.6
F	3,200	55	394	9.9	27.9	27.9	28.1	0.2
G	4,090	320	1,379	2.8	35.5	35.5	36.3	0.8
H	4,510	210	907	4.3	35.9	35.9	36.4	0.5
I	5,500	111	373	10.4	44.1	44.1	44.1	0.0
J	6,400	160	724	5.4	48.3	48.3	49.1	0.8
K	7,700	140	423	9.2	58.1	58.1	58.1	0.0
L	8,500	203	570	6.8	65.0	65.0	65.0	0.0
M	8,621	85	499	7.8	66.7	66.7	66.7	0.0
N	9,040	160	471	8.3	68.6	68.6	68.9	0.3

[1] Feet above mouth
[2] Elevation computed without consideration of backwater effects from Caribbean Sea

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX

FLOODWAY DATA

GUT NO. 4 – GUT NO. 5

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gut No. 5 (continued)								
O	10,100	250	772	5.0	80.2	80.2	80.2	0.0
P	11,300	180	437	8.9	94.2	94.2	94.6	0.4
Q	11,394	300	3,426	1.1	104.7	104.7	104.7	0.0
R	12,250	280	897	4.3	105.3	105.3	105.3	0.0
Gut No. 6								
A	374	722	3,528	1.7	5.0	5.0	5.7	0.7
B	516	870	4,890	1.2	8.6	8.6	9.3	0.7
C	1,147	840	4,240	1.4	8.9	8.9	9.6	0.7
D	1,800	530	3,109	1.9	9.3	9.3	10.0	0.7
E	2,100	172[2]	858	3.8	9.3	9.3	10.0	0.7
F	3,100	290	1,532	2.1	10.8	10.8	11.5	0.7
G	4,283	240	685	4.8	17.9	17.9	18.2	0.3
H	4,417	230	659	5.0	20.1	20.1	20.2	0.1
I	5,200	182	503	6.5	28.9	28.9	29.0	0.1
J	6,300	125	342	9.6	46.9	46.9	46.9	0.0
K	6,455	145	520	6.3	50.9	50.9	51.6	0.7
L	7,000	99	383	8.5	68.2	68.2	68.7	0.5
M	7,220	300	5,473	0.6	88.4	88.4	88.4	0.0
N	7,950	105	310	10.6	96.4	96.4	96.4	0.0
O	8,096	90	273	6.3	104.4	104.4	105.3	0.9

[1] Feet above mouth
[2] Does not include Tributary to Gut No. 6 Floodway

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX

FLOODWAY DATA

GUT NO. 5 – GUT NO. 6

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Salt River								
A	240	250	944	7.8	7.4	4.1[2]	4.8	0.7
B	650	300	1,071	6.9	9.3	9.3	9.3	0.0
C	1,600	350	1,070	6.9	12.8	12.8	13.4	0.6
D	2,000	330	1,135	6.5	15.1	15.1	15.3	0.2
E	3,000	300	1,506	4.9	17.3	17.3	18.0	0.7
F	4,000	240	1,218	6.1	19.4	19.4	19.9	0.5
G	4,215	250	735	10.1	20.9	20.9	20.9	0.0
H	4,415	225	1,067	6.9	26.0	26.0	26.5	0.5
I	4,571	280	1,419	5.2	28.2	28.2	28.3	0.1
J	5,350	255	901	8.2	31.2	31.2	31.3	0.1
K	6,400	285	1,108	6.7	38.1	38.1	38.3	0.2
L	7,500	250	768	9.6	50.9	50.9	50.9	0.0
M	8,500	242	730	10.1	65.7	65.7	66.0	0.3
N	9,590	262	859	8.6	87.6	87.6	88.4	0.8
O	9,660	330	1,044	7.1	88.9	88.9	89.2	0.3
P	10,500	280	781	9.5	102.7	102.7	102.8	0.1
Q	11,140	177	649	11.4	112.0	112.0	112.0	0.0
R	11,250	132	651	11.4	118.8	118.8	119.2	0.1
S	12,000	130	664	11.1	131.2	131.2	131.2	0.0
T	12,782	130	602	12.3	148.3	148.3	148.8	0.5
U	12,983	200	751	9.8	153.6	153.6	154.2	0.6
V	14,028	280	1,984	3.7	172.1	172.1	172.7	0.6
W	14,800	135	611	12.1	189.0	189.0	189.0	0.0

[1] Feet above mouth
[2] Elevation computed without consideration of backwater effect from Caribbean Sea

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary to Gut No. 6								
A	650	230	473	5.5	9.8	9.8	10.5	0.7
B	1,270	250	749	3.5	15.4	15.4	16.2	0.8
C	1,407	340	947	2.8	16.6	16.6	17.0	0.4
D	1,600	190	440	5.9	18.0	18.0	18.6	0.6

[1] Feet above confluence with Gut No. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX

FLOODWAY DATA

TRIBUTARY TO GUT NO. 6

TABLE 9

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET LOCAL DATUM)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Turpentine Run								
A	450	580	2,078	4.2	7.1	7.1	8.0	0.9
B	1,000	270	1,382	6.3	11.8	11.8	12.5	0.7
C	1,475	198	1,927	4.5	15.0	15.0	15.9	0.9
D	1,870	242	1,609	5.4	15.7	15.7	16.5	0.8
E	2,185	155	1,250	6.9	17.1	17.1	18.1	1.0
F	2,243	165	1,009	8.6	19.5	19.5	20.4	0.9
G	3,091	120	808	10.7	24.3	24.3	24.3	0.0
H	3,631	47	473	18.3	28.9	28.9	28.9	0.0
I	3,813	115	1,511	5.7	35.0	35.0	35.0	0.0
J	4,063	170	2,038	4.2	35.6	35.6	35.6	0.0
K	4,493	170	1,575	5.5	36.0	36.0	36.0	0.0
L	5,147	142	803	10.8	36.8	36.8	36.9	0.1

[1] Feet above confluence with Caribbean Sea

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. THOMAS

FLOODWAY DATA

TURPENTINE RUN

TABLE 9

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Area of special flood hazard formerly protected from the 1-percent annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, and to areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent annual chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent annual chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

7.0 OTHER STUDIES

The USACE prepared a Flood Hazard Information report for the Demarara (Frenchtown) area near Charlotte Amalie (USACE, 1977). The USGS prepared flood contour maps for the areas in and around Charlotte Amalie and the Cyril E. King Airport for the floods of March 1, 1969, and November 12, 1974 (Black, Crow, and Eidsness, Inc., Engineers, 1976). The SCS prepared a reconnaissance report for the flooding problems at the airport (U.S. Department of Agriculture, 1972). The USACE prepared a similar report for the Savan Gut in Charlotte Amalie (USACE, 1977).

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed FIS for the U.S. Virgin Islands, Island of St. Thomas (FEMA, 1980, Flood Insurance Study, U.S. Virgin Islands, Island of St. Croix, FEMA, 1980, Flood Insurance Study, U.S. Virgin Islands, Island of St. John, and FEMA, 1993).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 26 Federal Plaza, Room 1351, New York, New York 10278.

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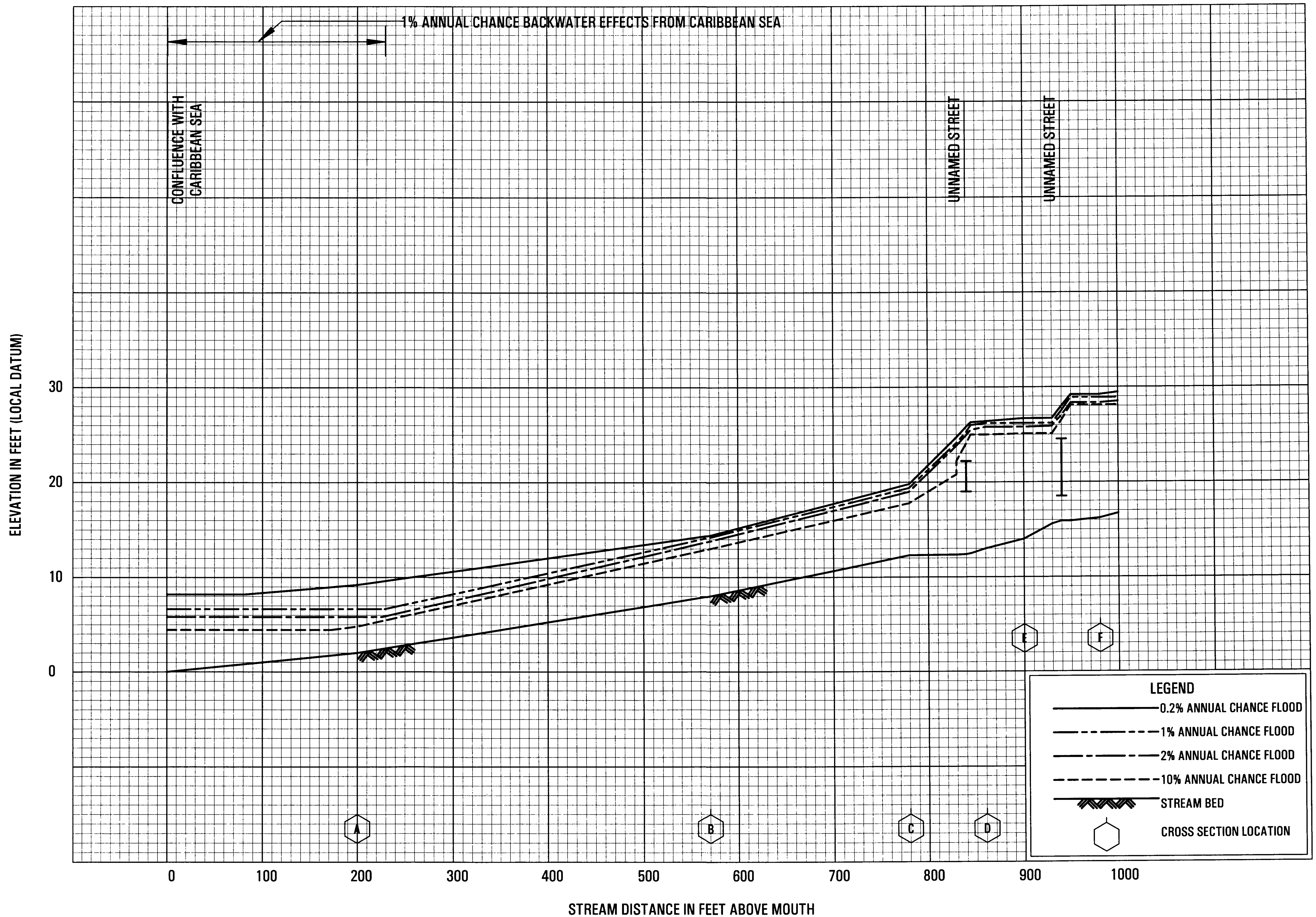


FLOOD PROFILES

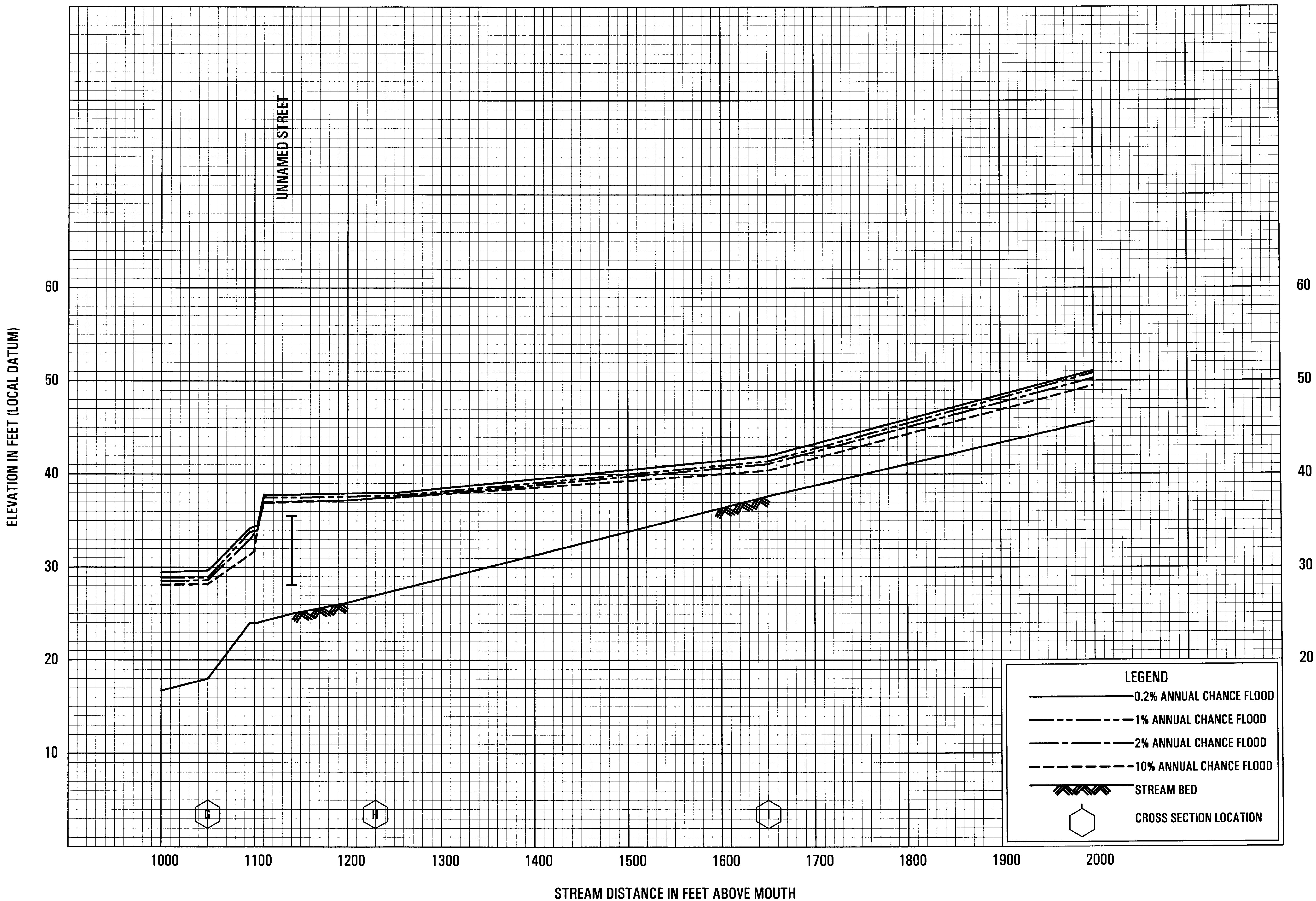
GUT NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

01P



FLOOD PROFILES

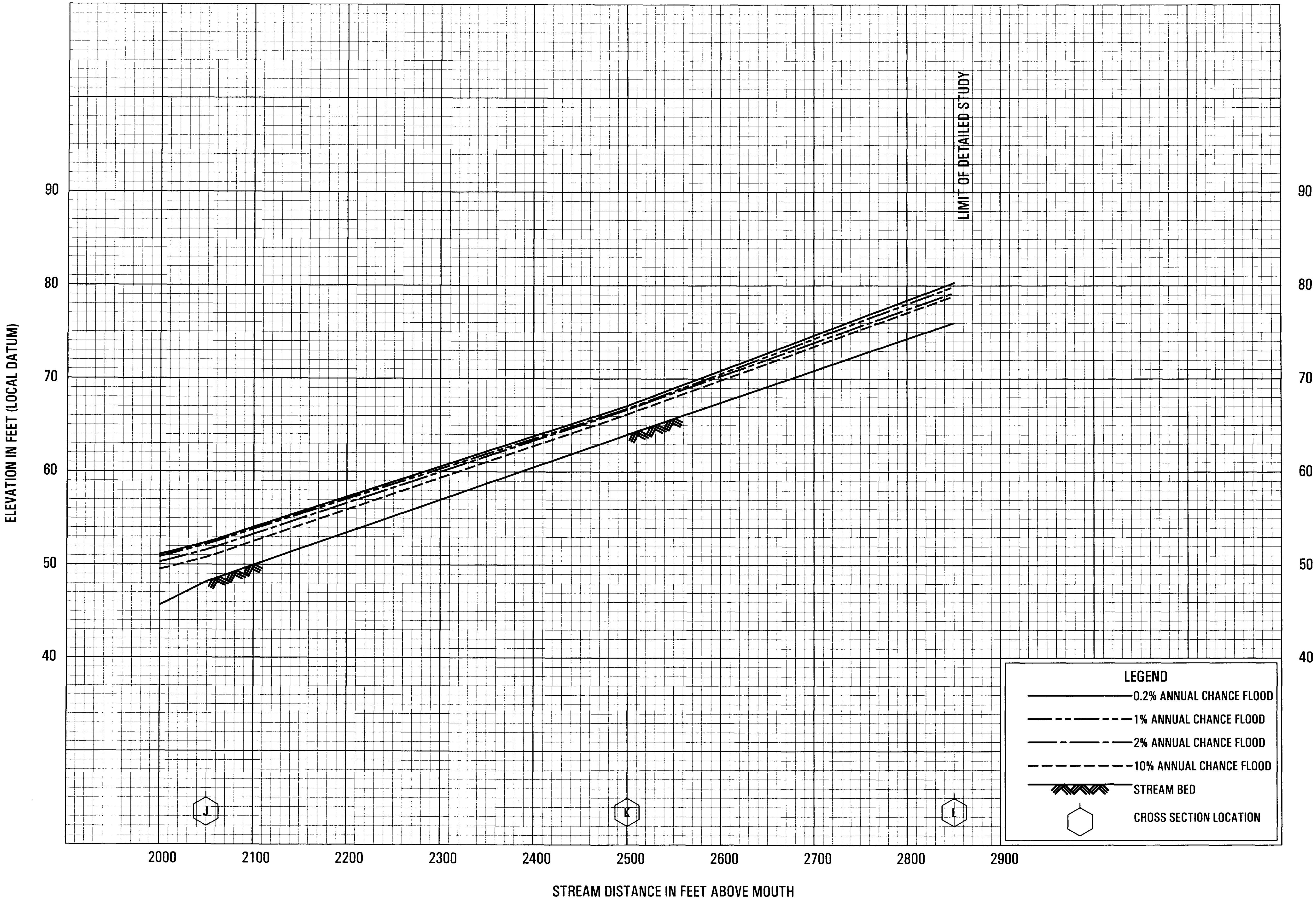
GUT NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

02P



FLOOD PROFILES

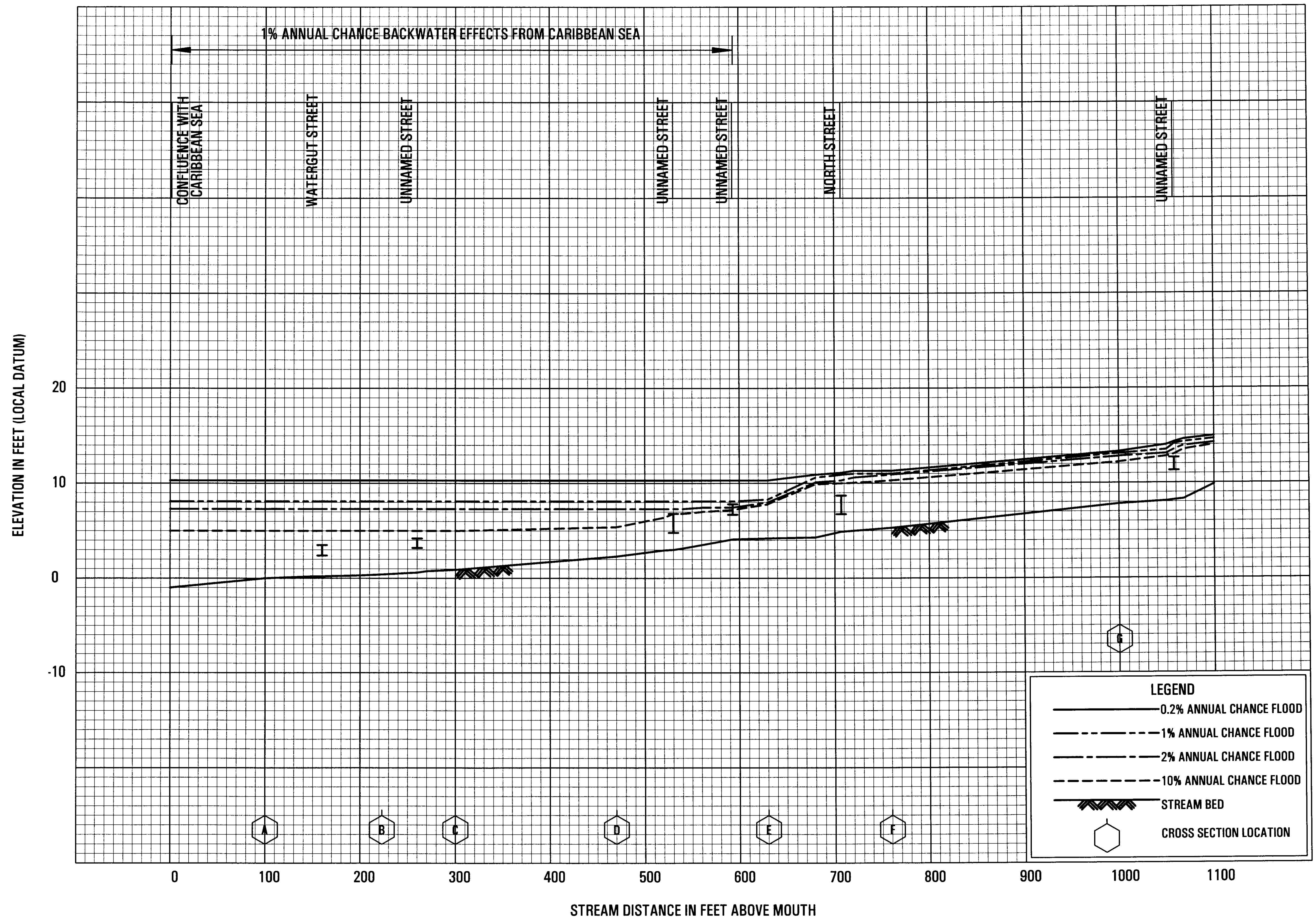
GUT NO. 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

03P



FLOOD PROFILES

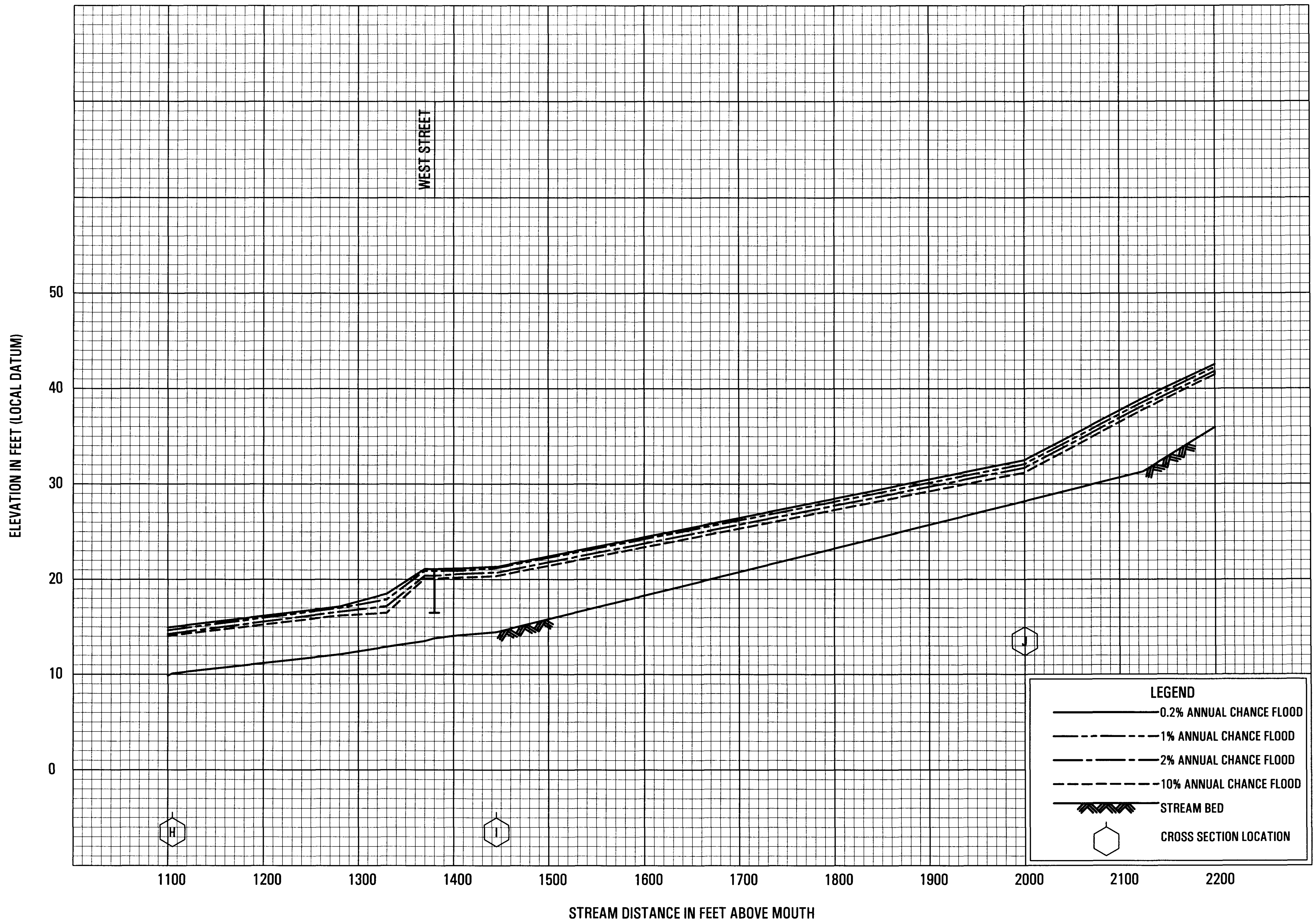
GUT NO. 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

04P



FLOOD PROFILES

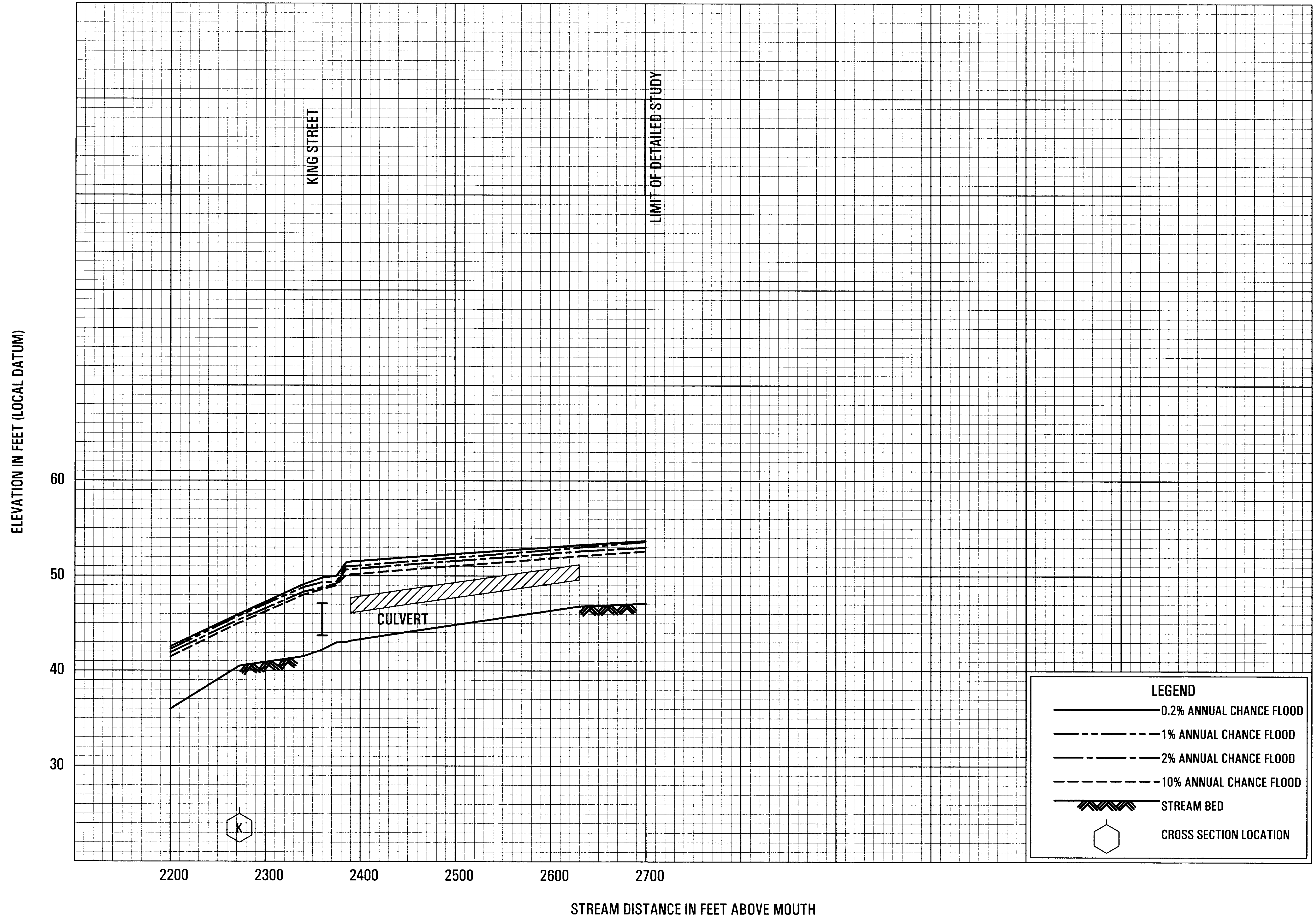
GUT NO. 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

05P



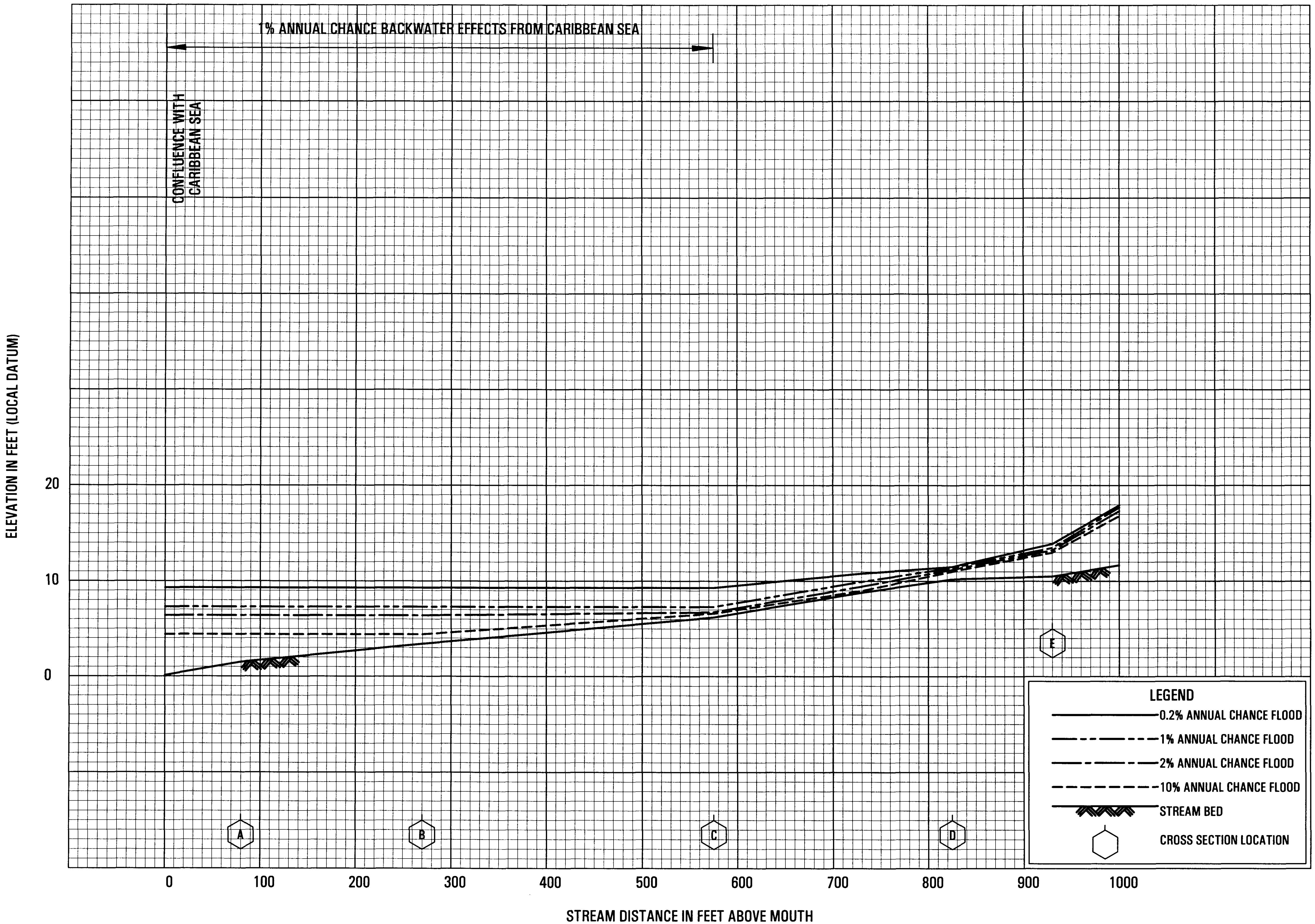
FLOOD PROFILES

GUT NO. 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



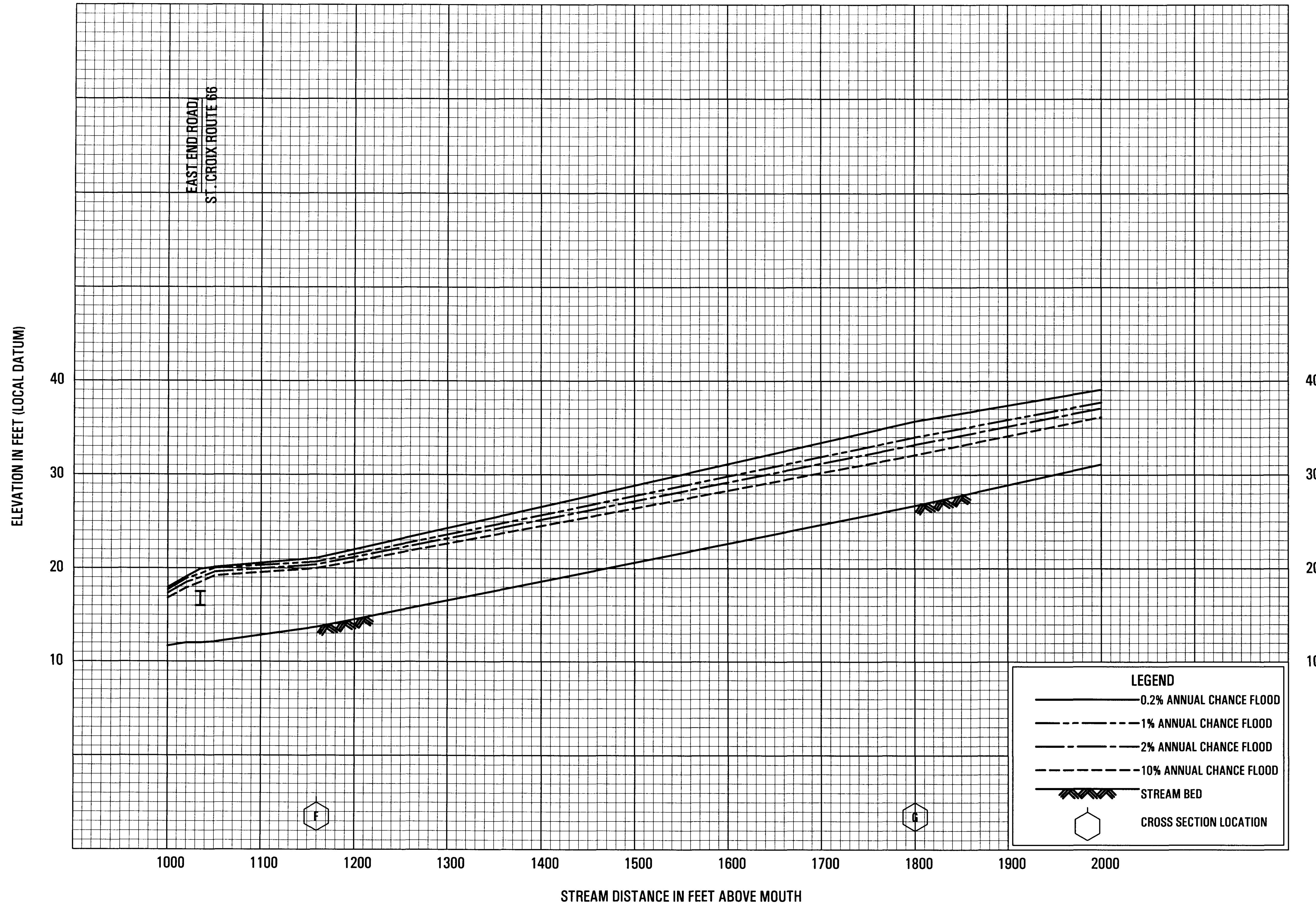
FLOOD PROFILES

GUT NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

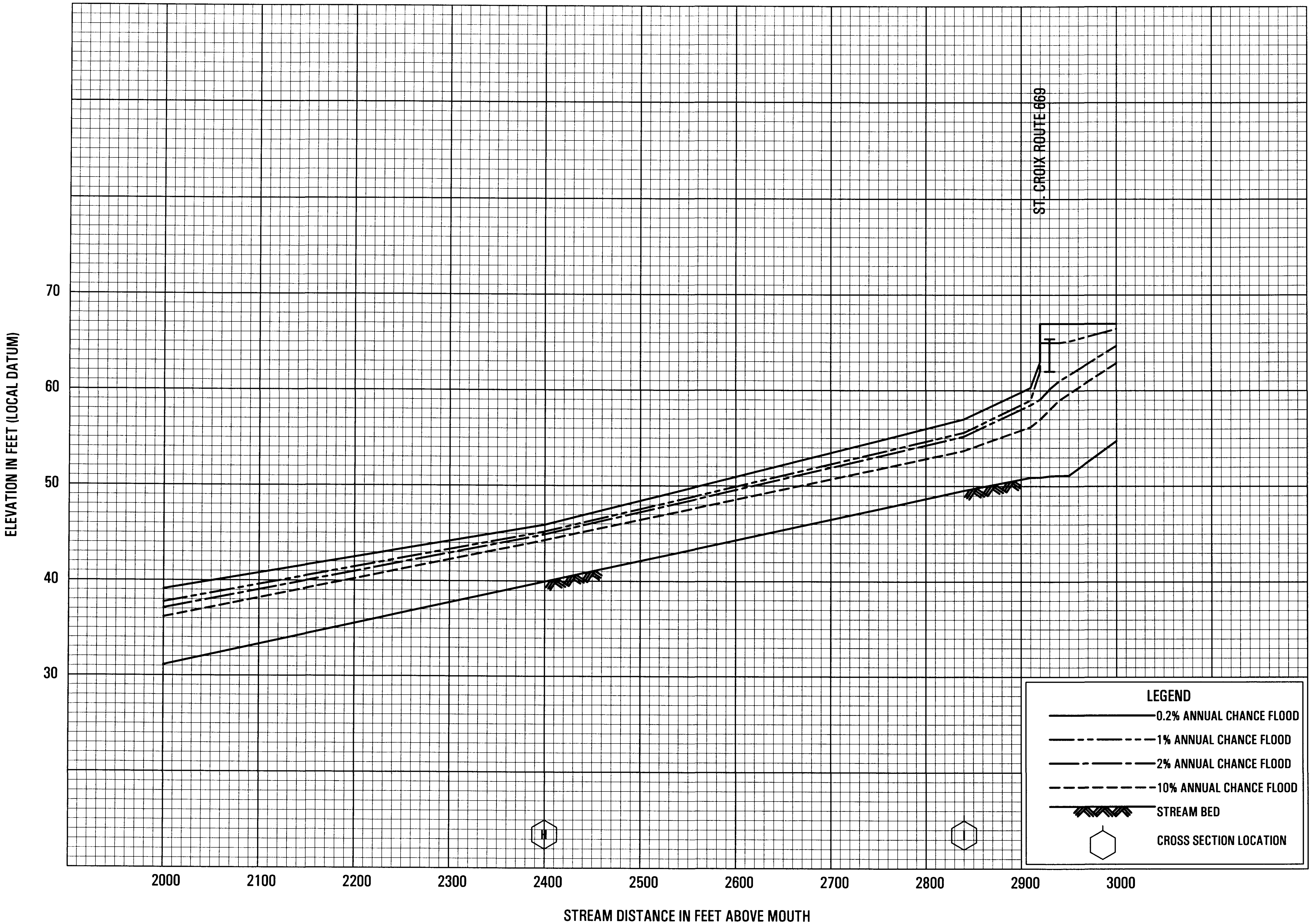
GUT NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

08P



FLOOD PROFILES

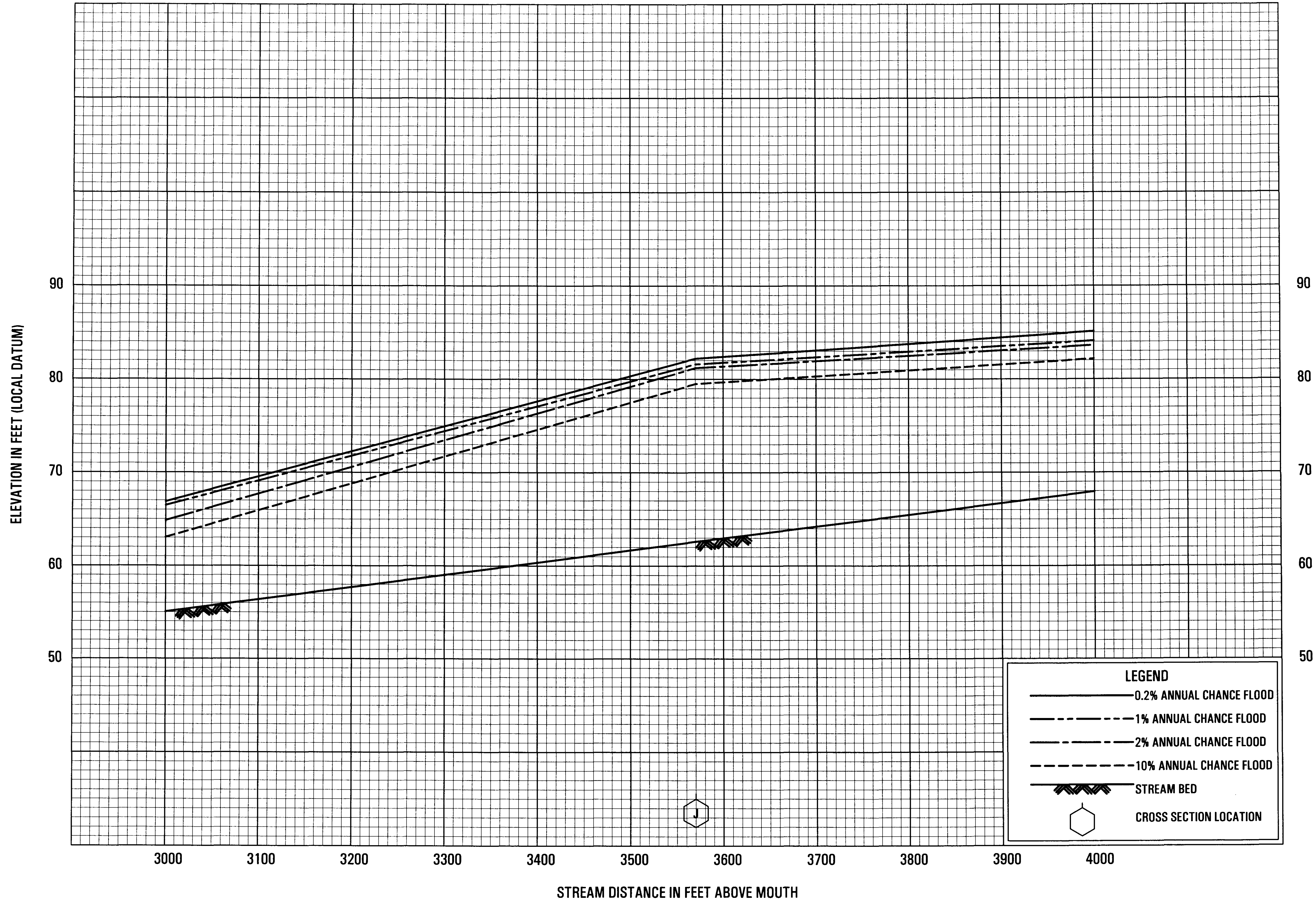
GUT NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

09P



FLOOD PROFILES

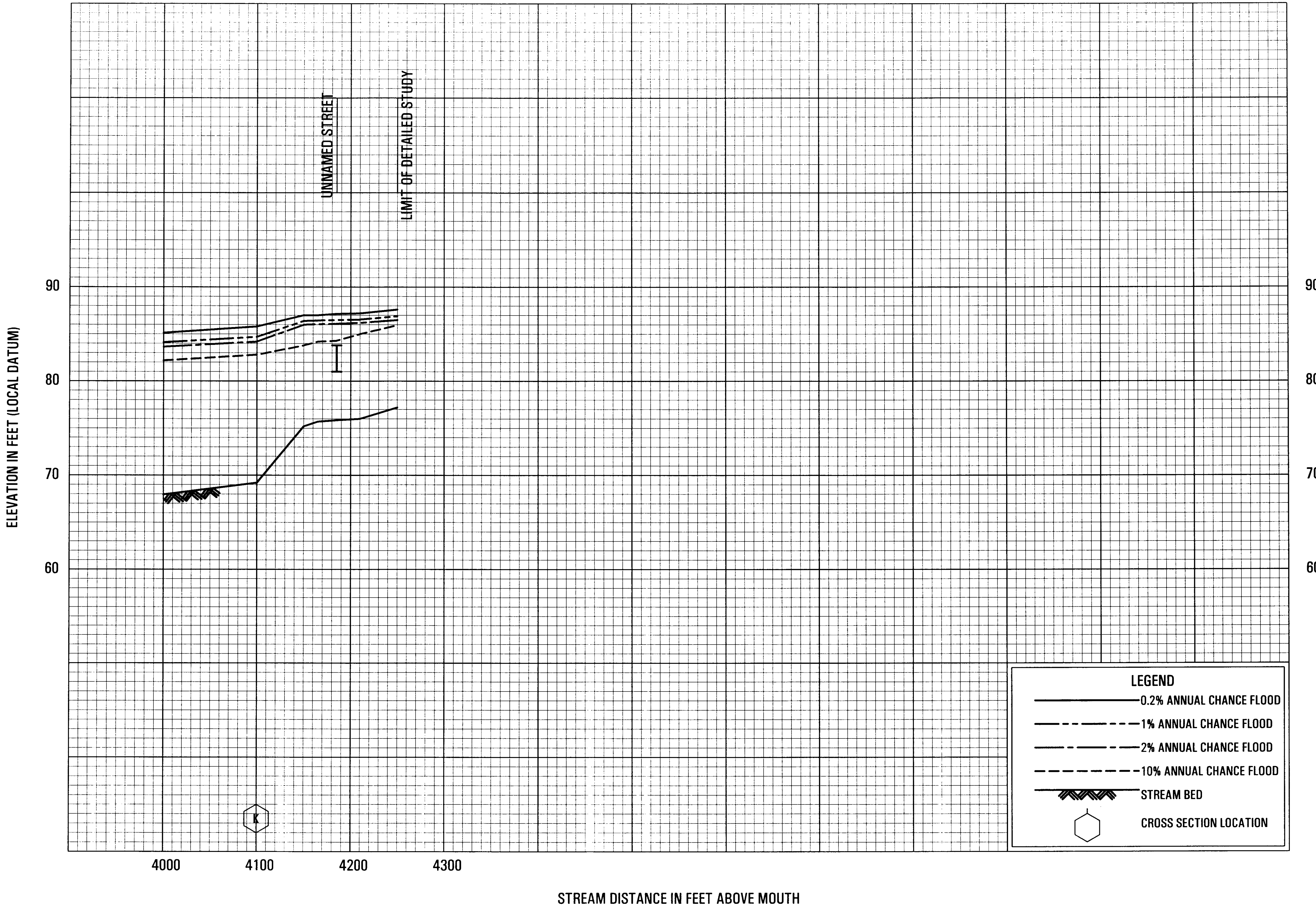
GUT NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

10P



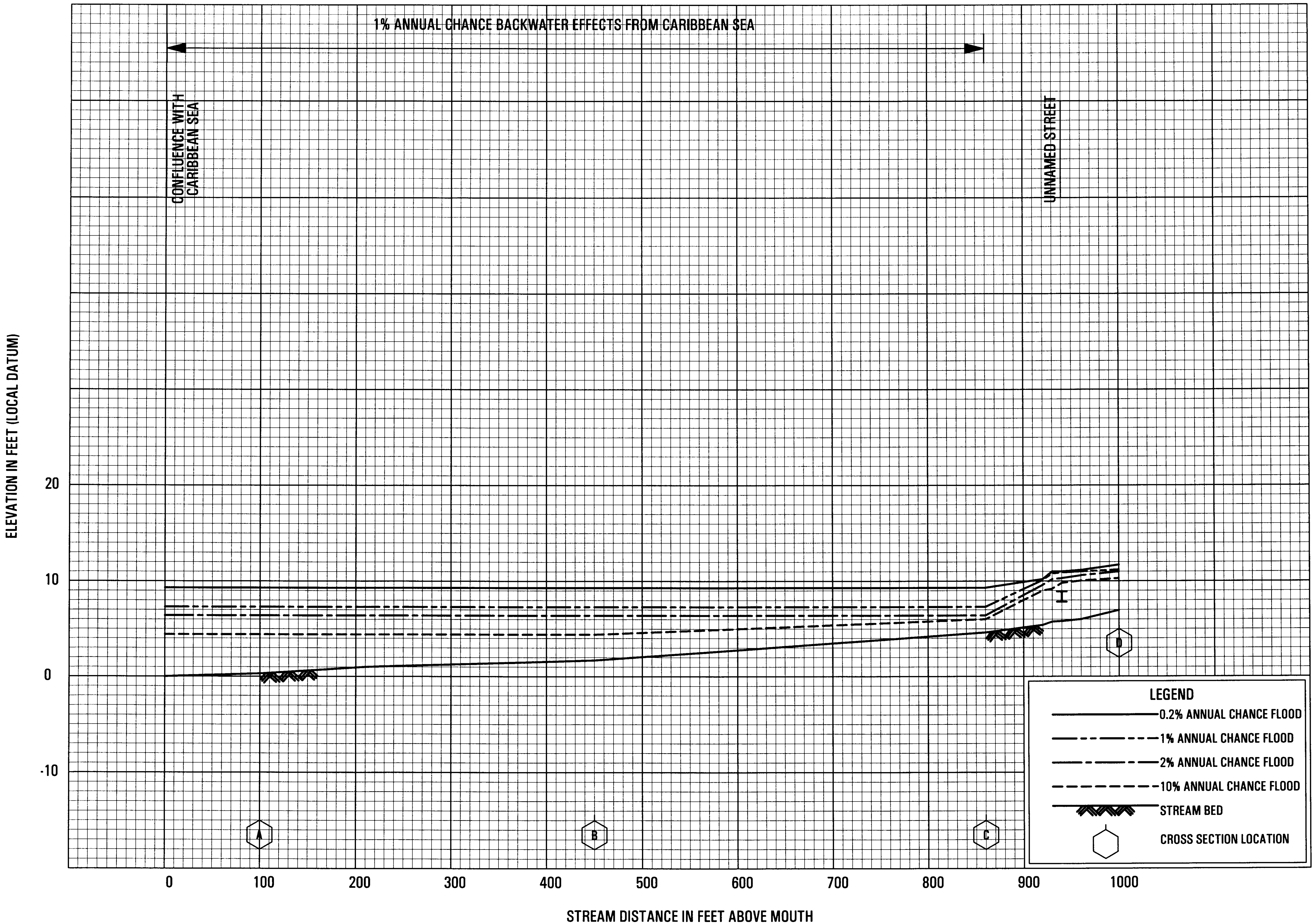
FLOOD PROFILES

GUT NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



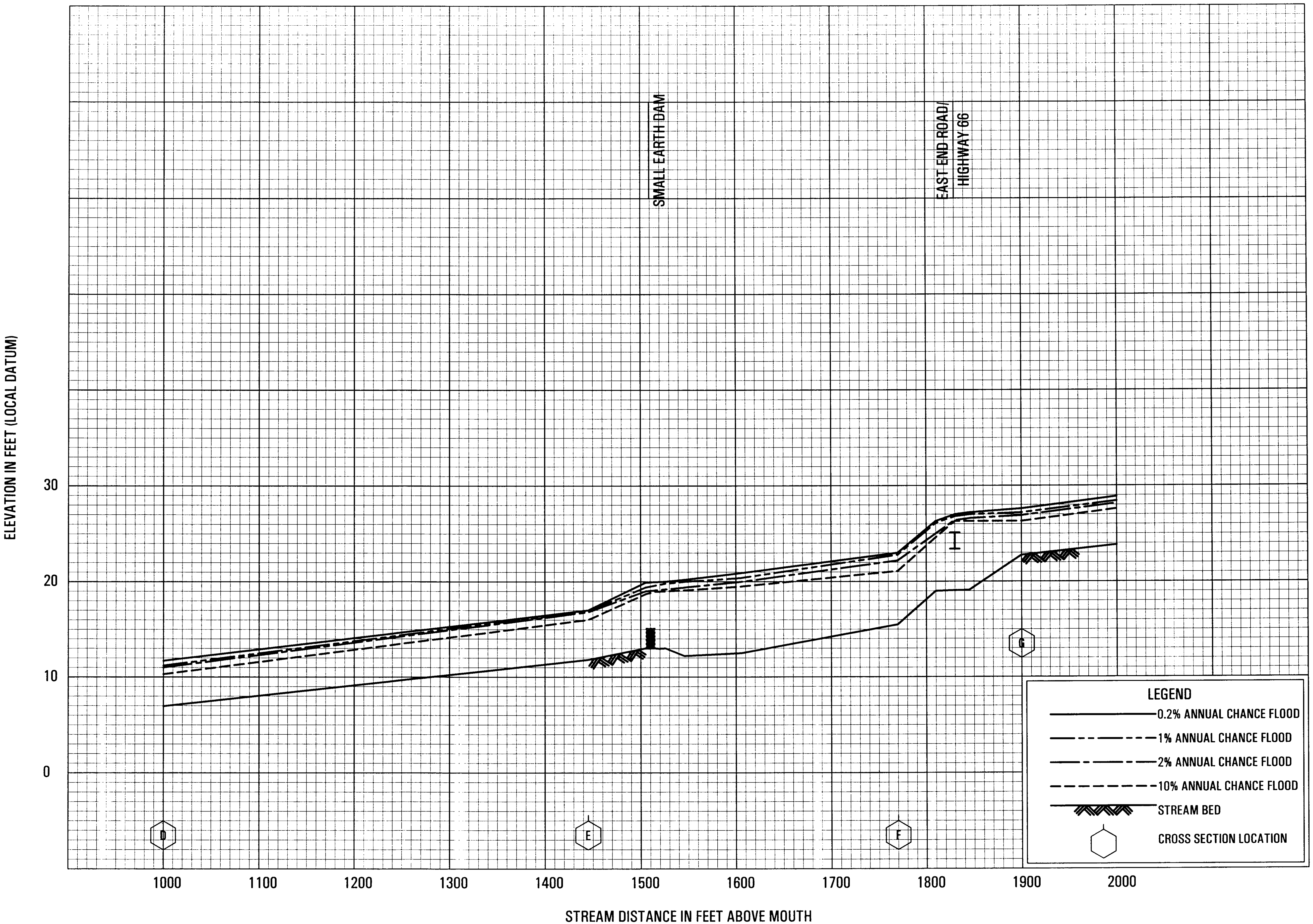
FLOOD PROFILES

GUT NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

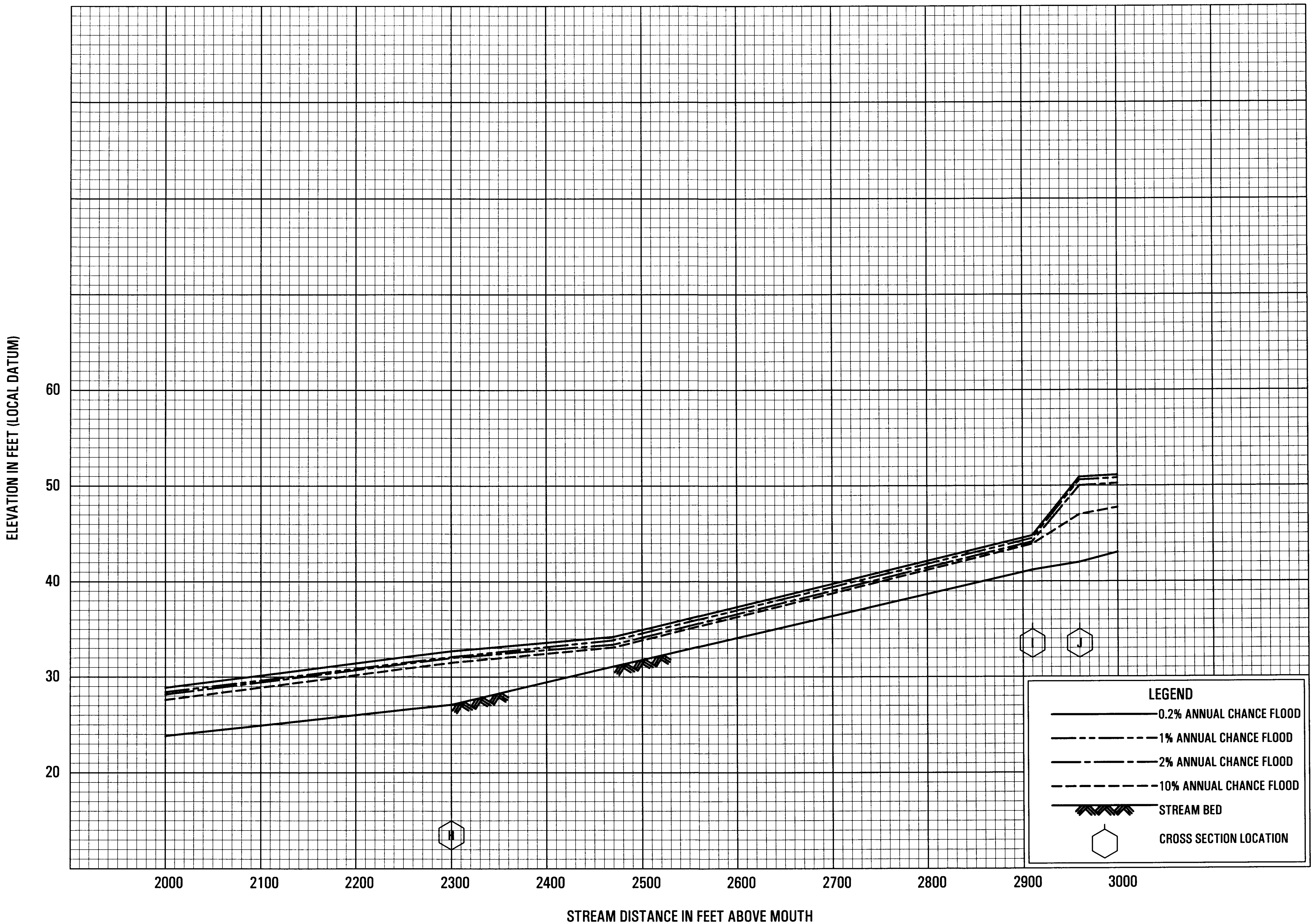
GUT NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

13P



FLOOD PROFILES

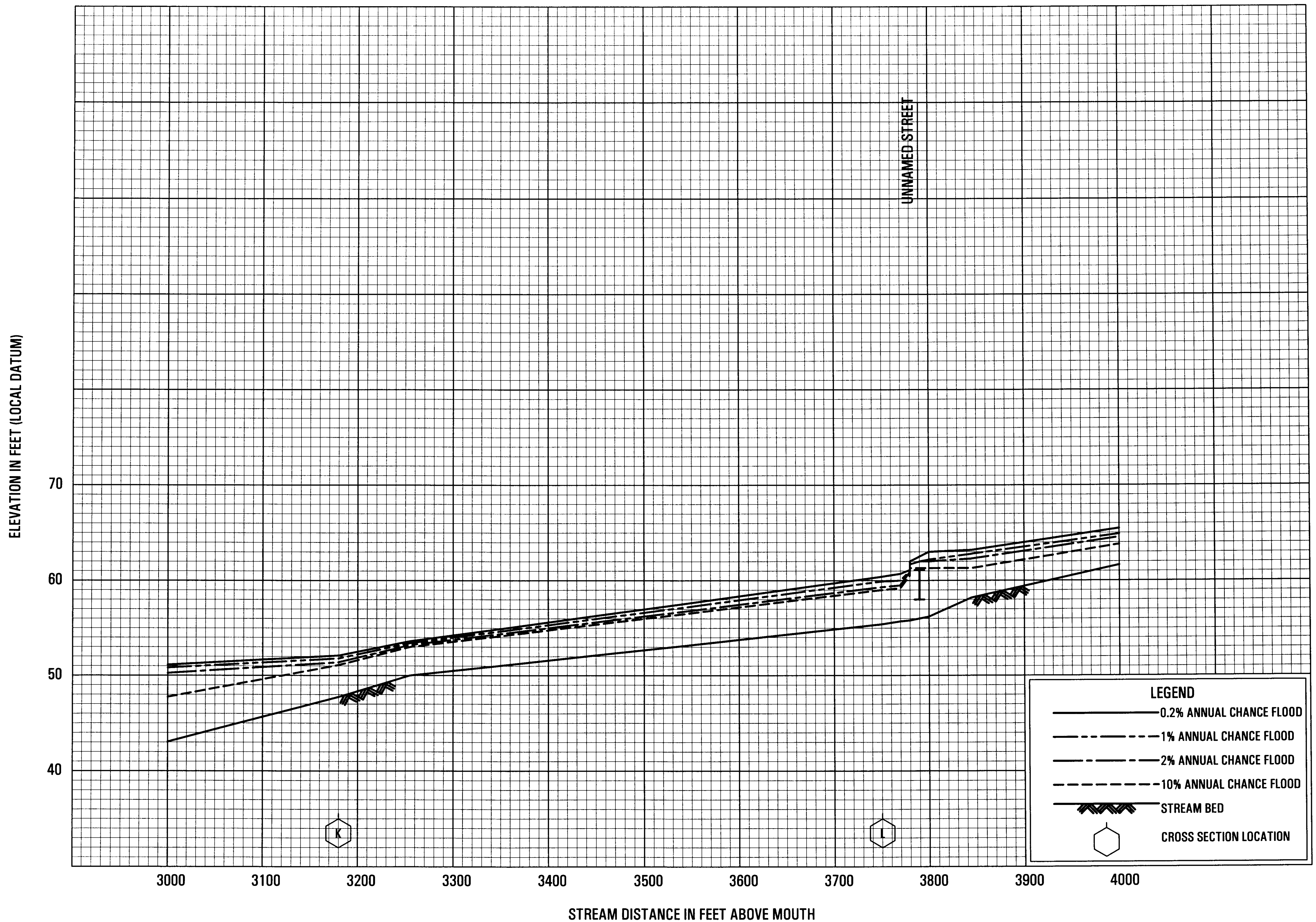
GUT NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

14P



FLOOD PROFILES

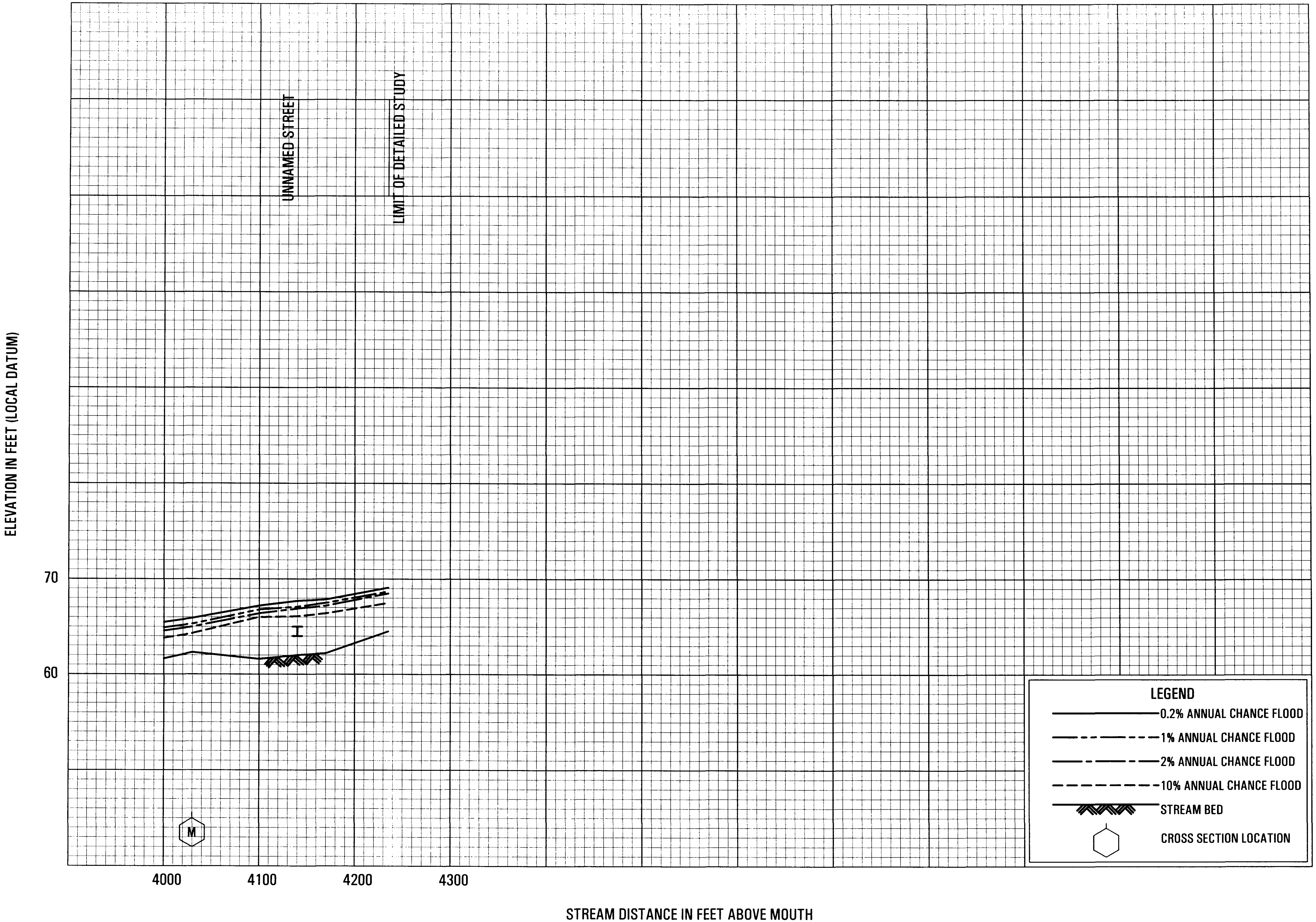
GUT NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

15P



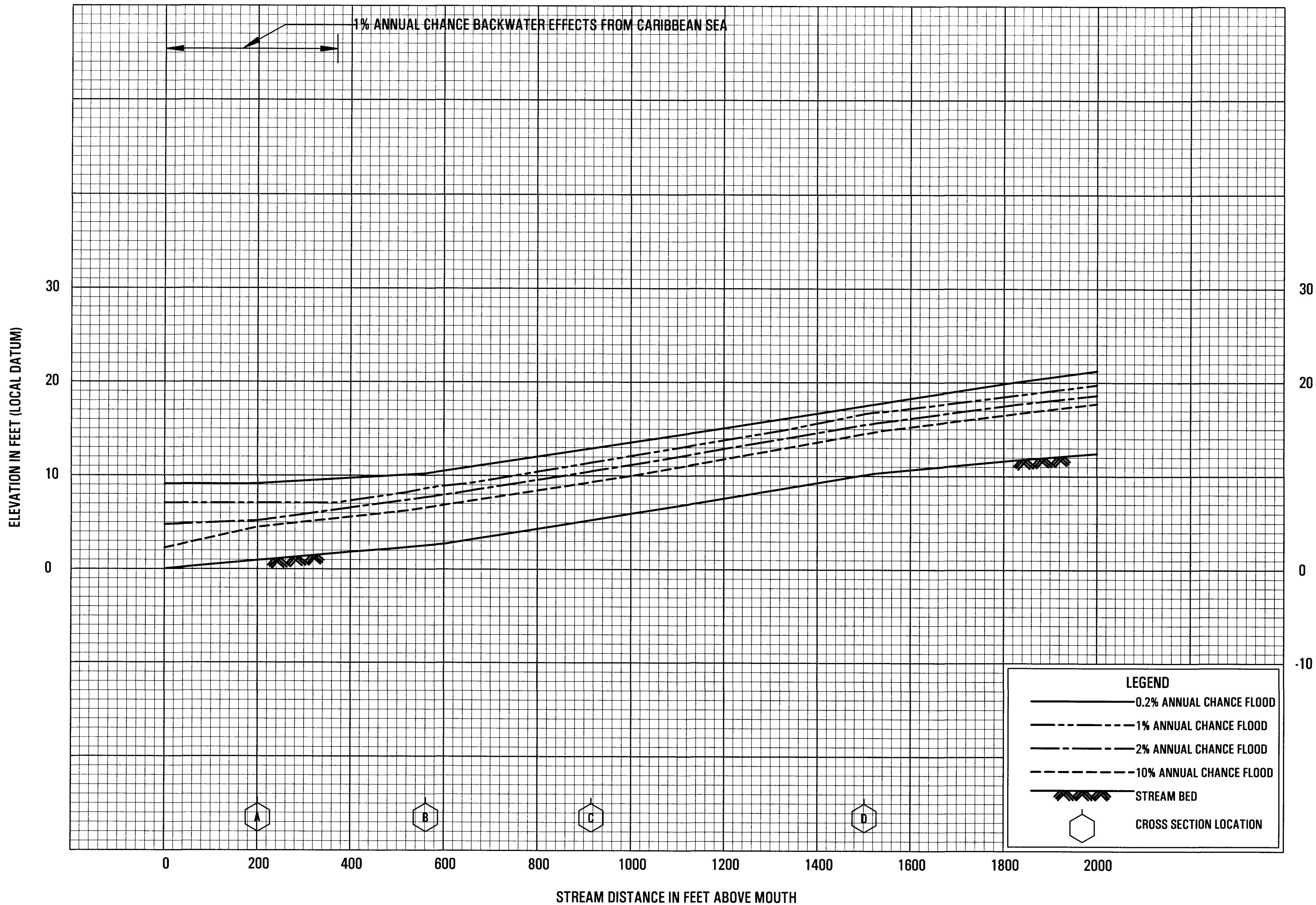
FLOOD PROFILES

GUT NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

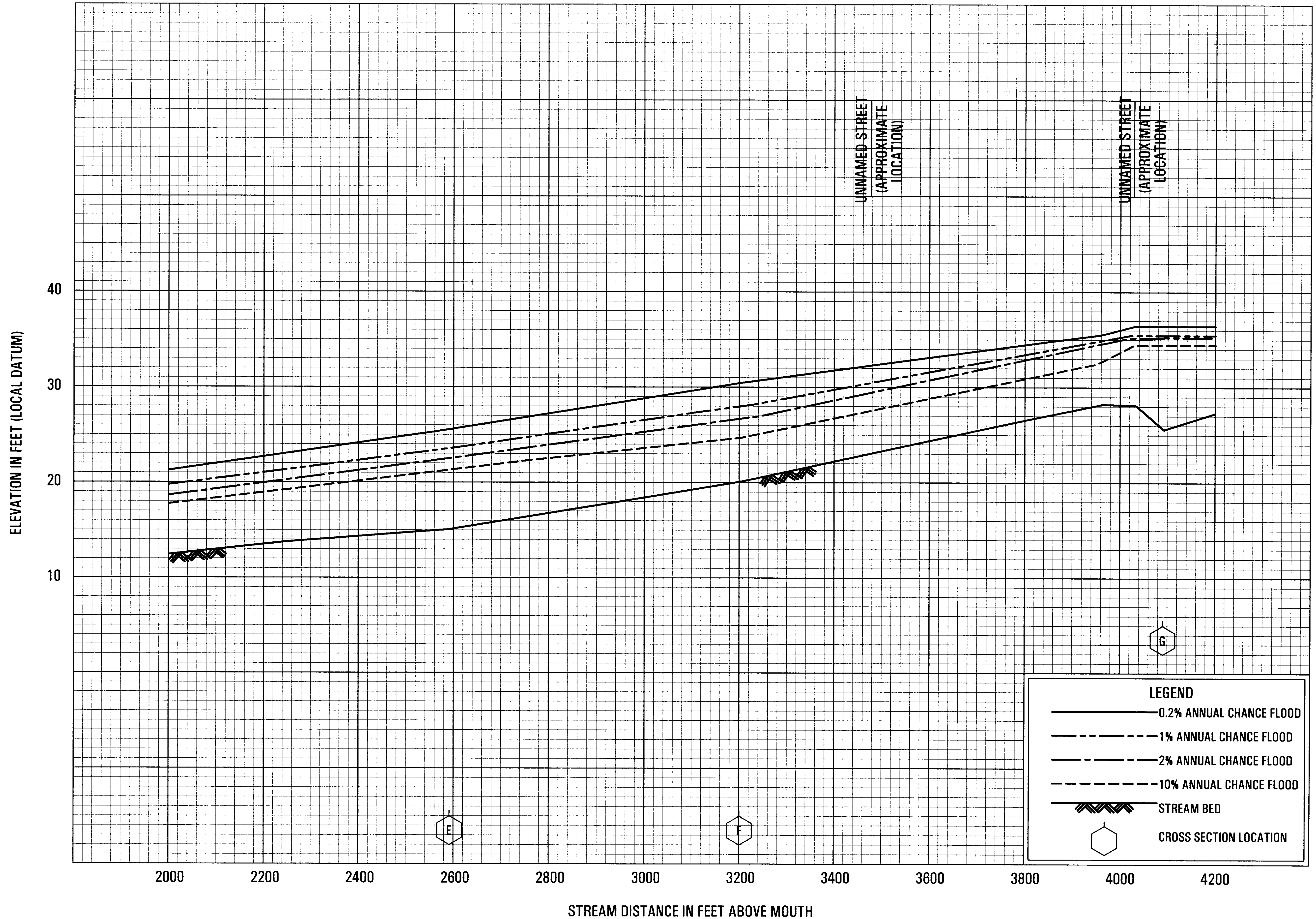
GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

17P



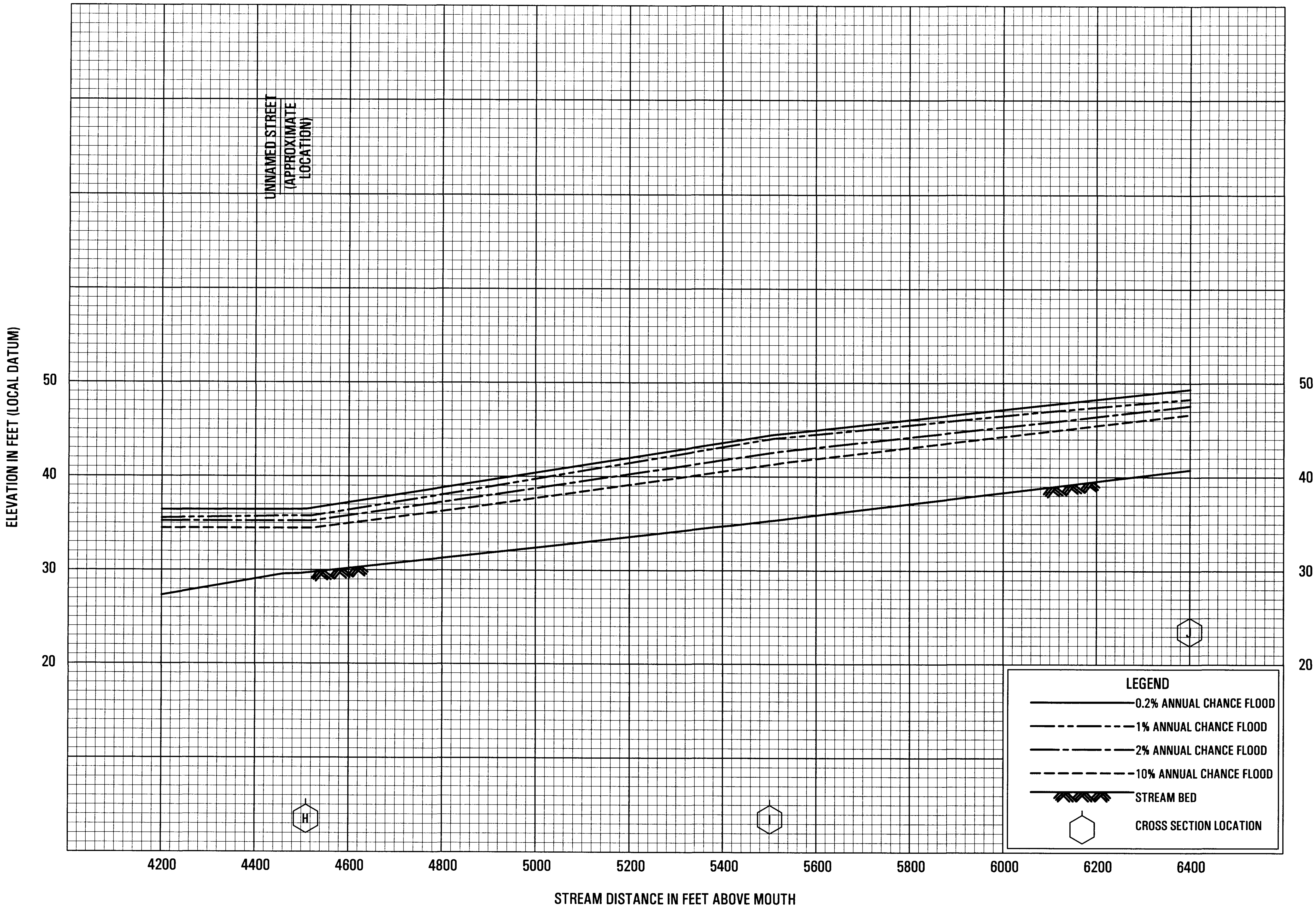
FLOOD PROFILES

GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



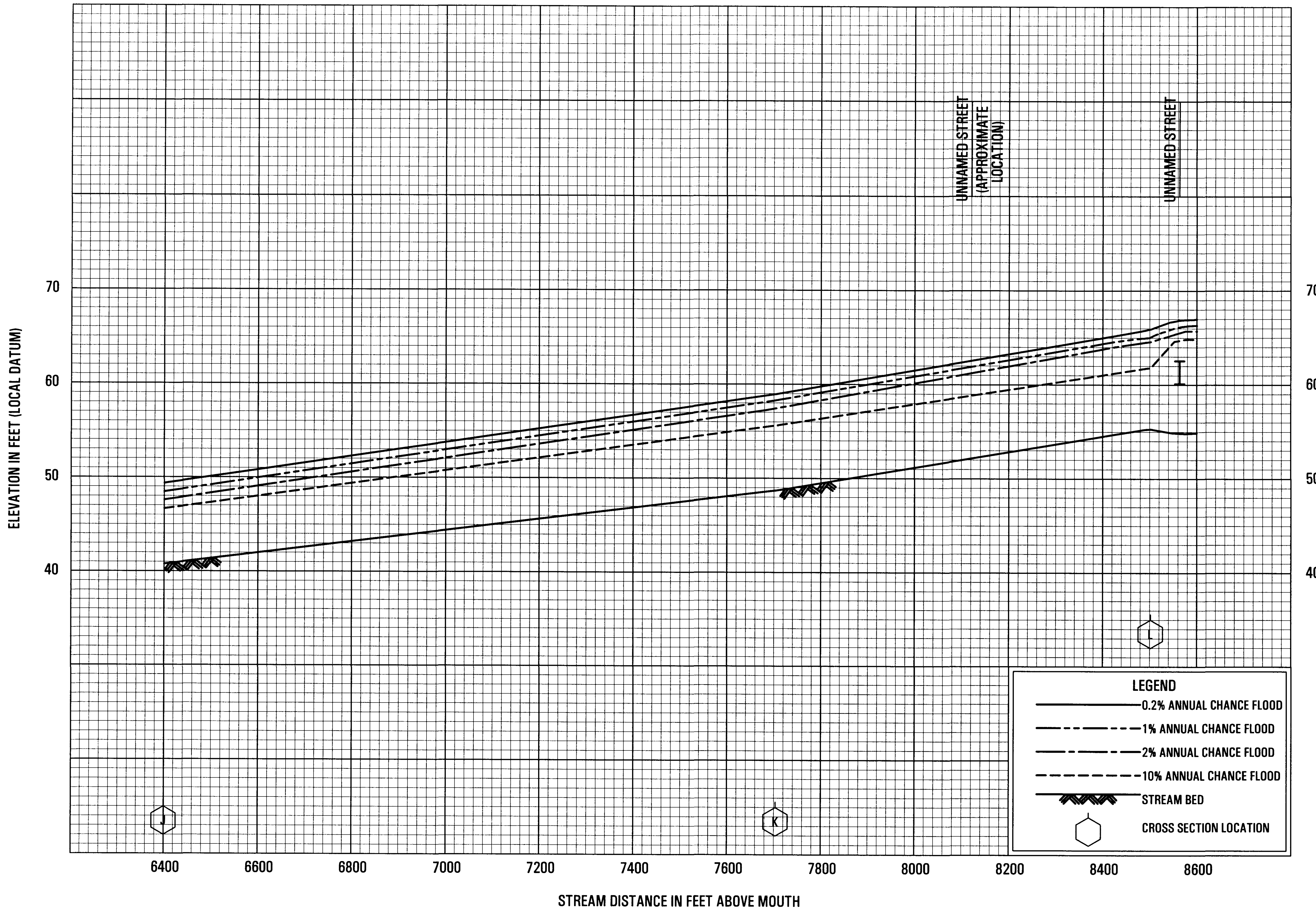
FLOOD PROFILES

GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

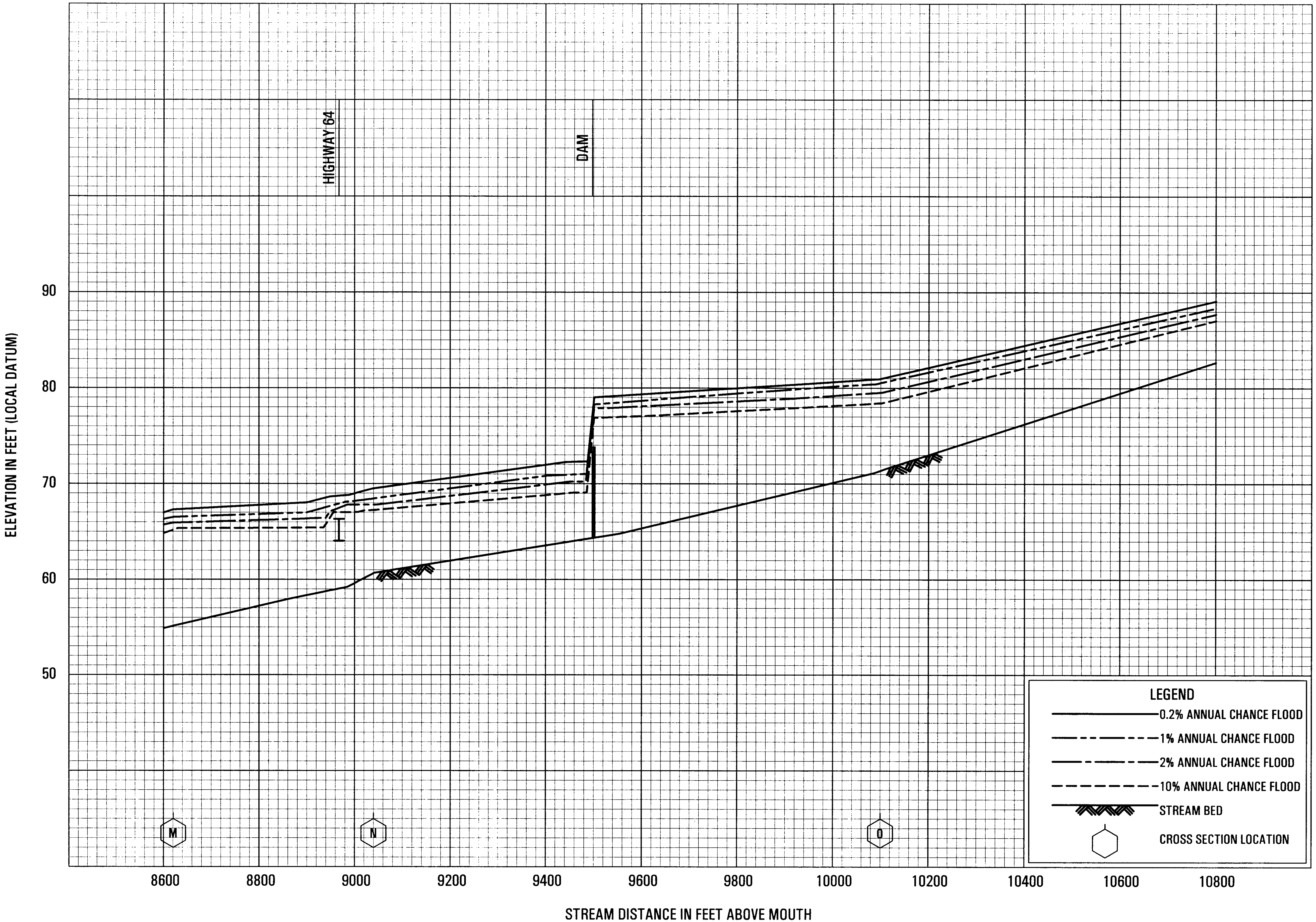
GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

20P



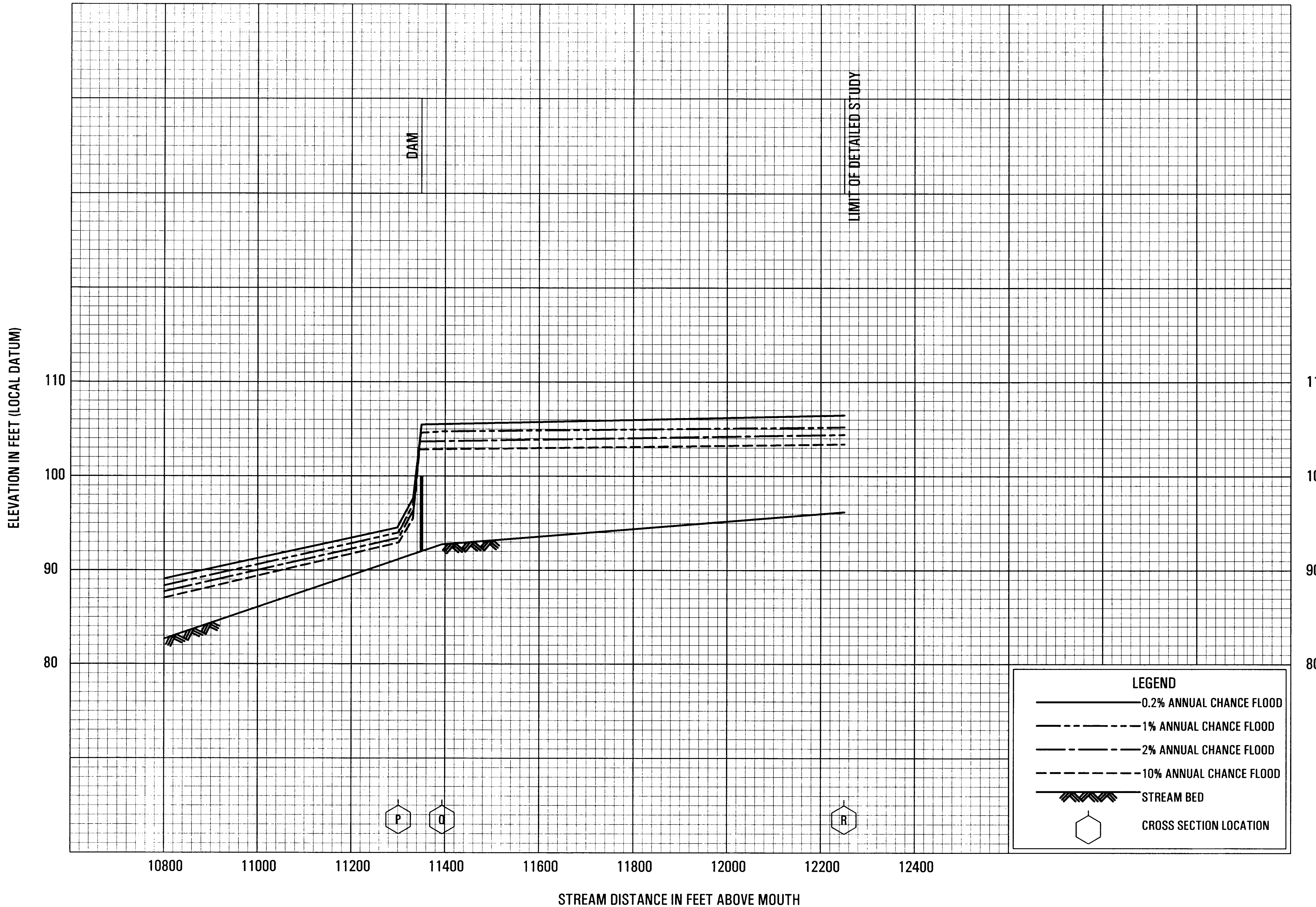
FLOOD PROFILES

GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

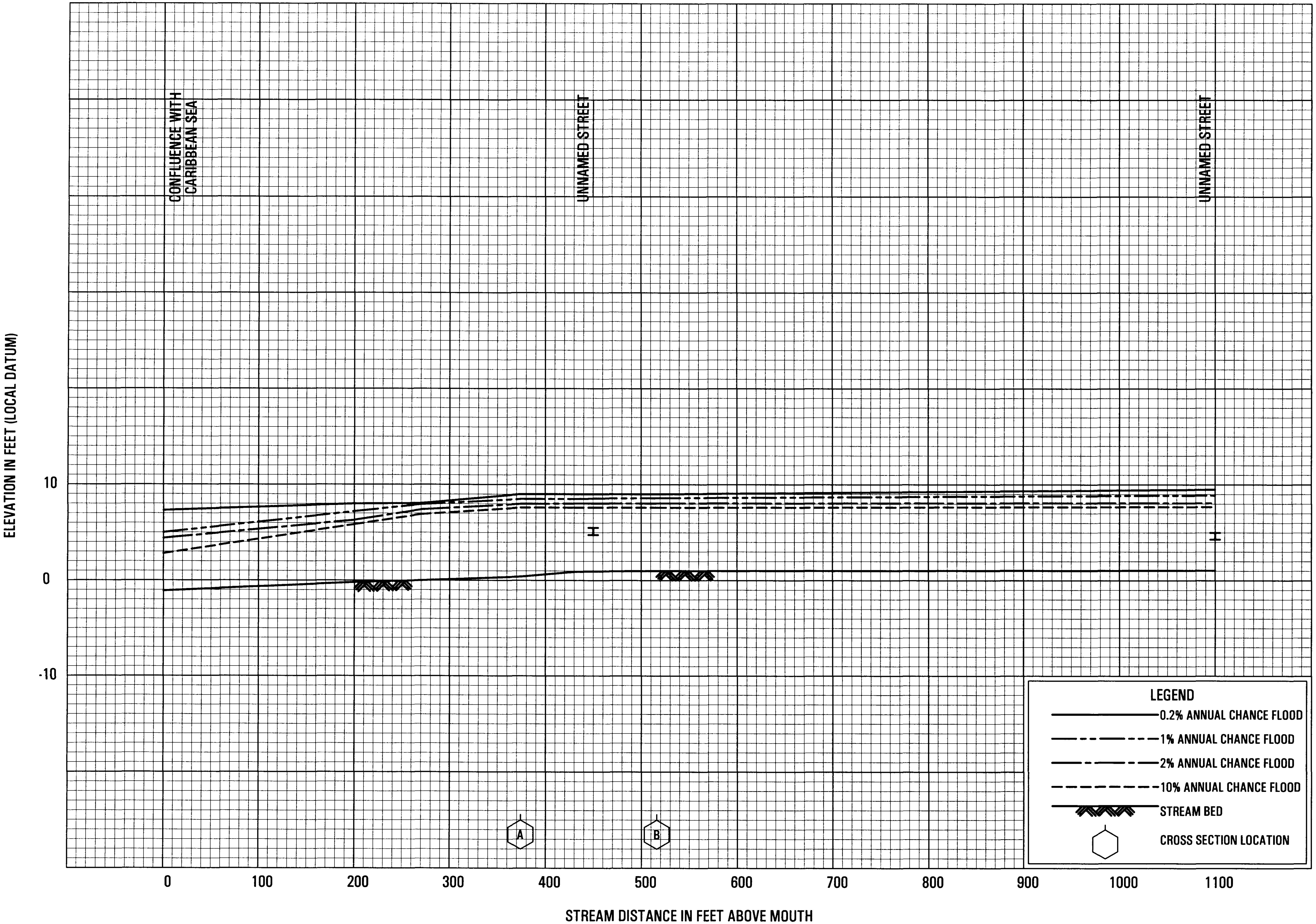
GUT NO. 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

22P



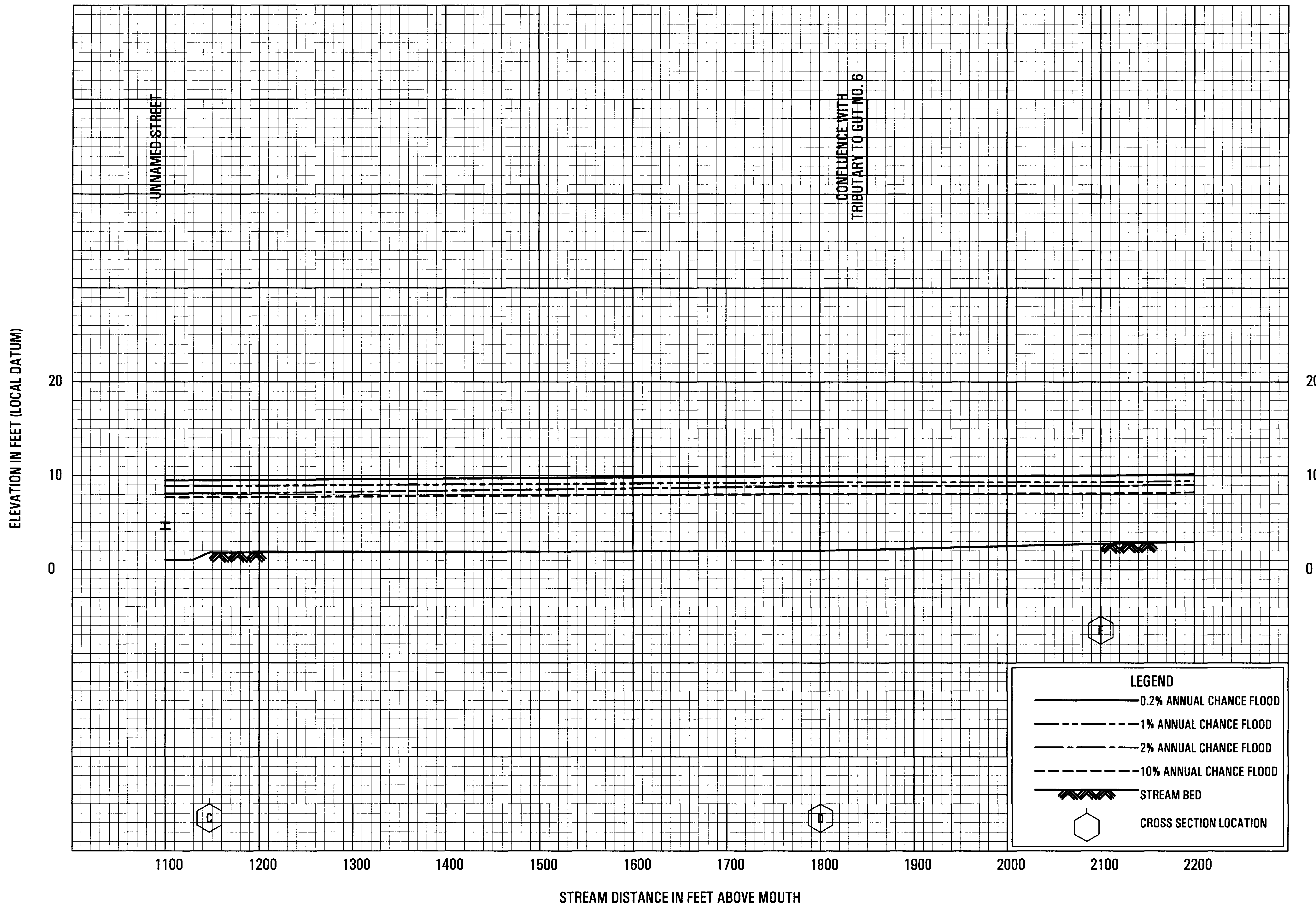
FLOOD PROFILES

GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



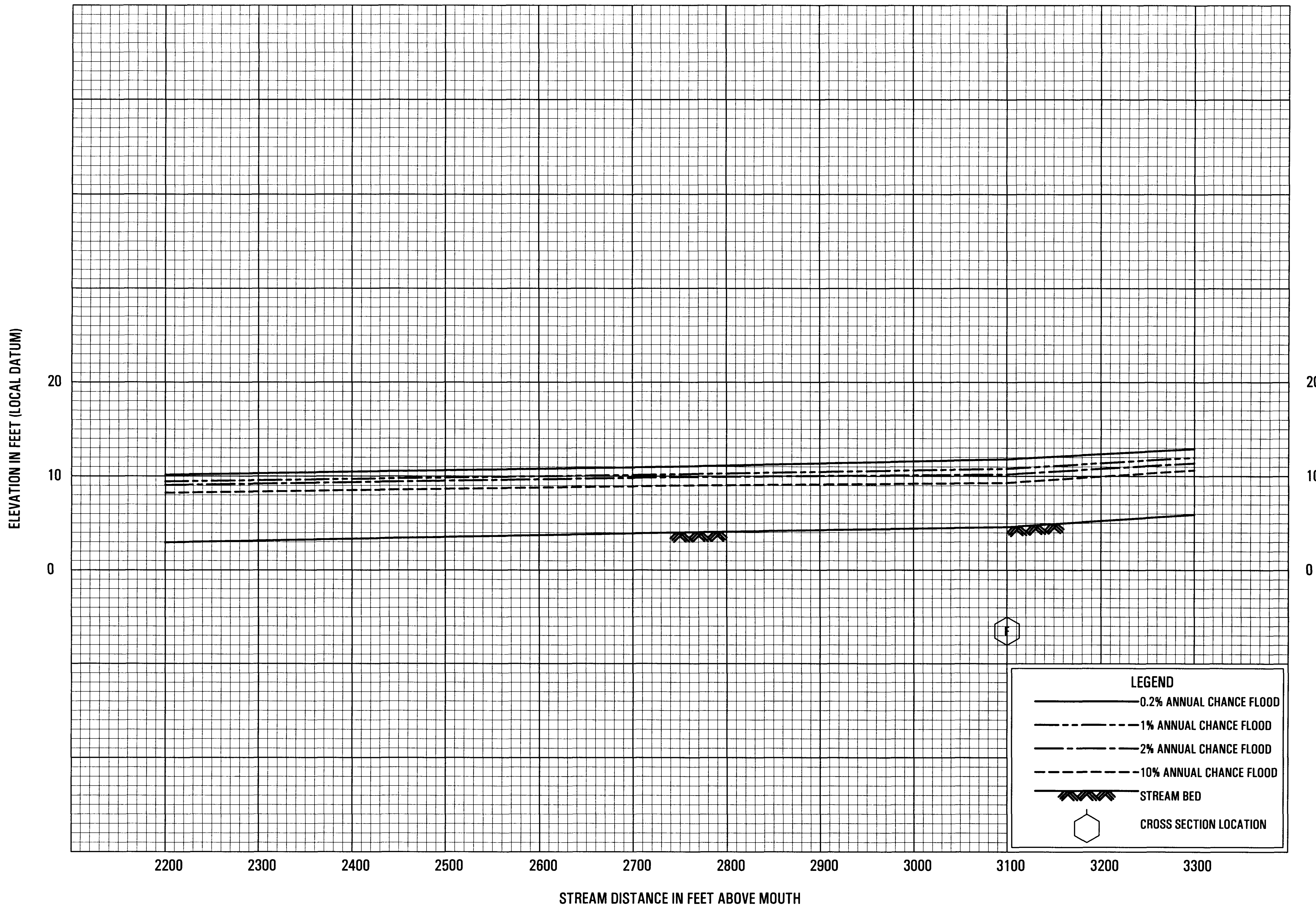
FLOOD PROFILES

GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

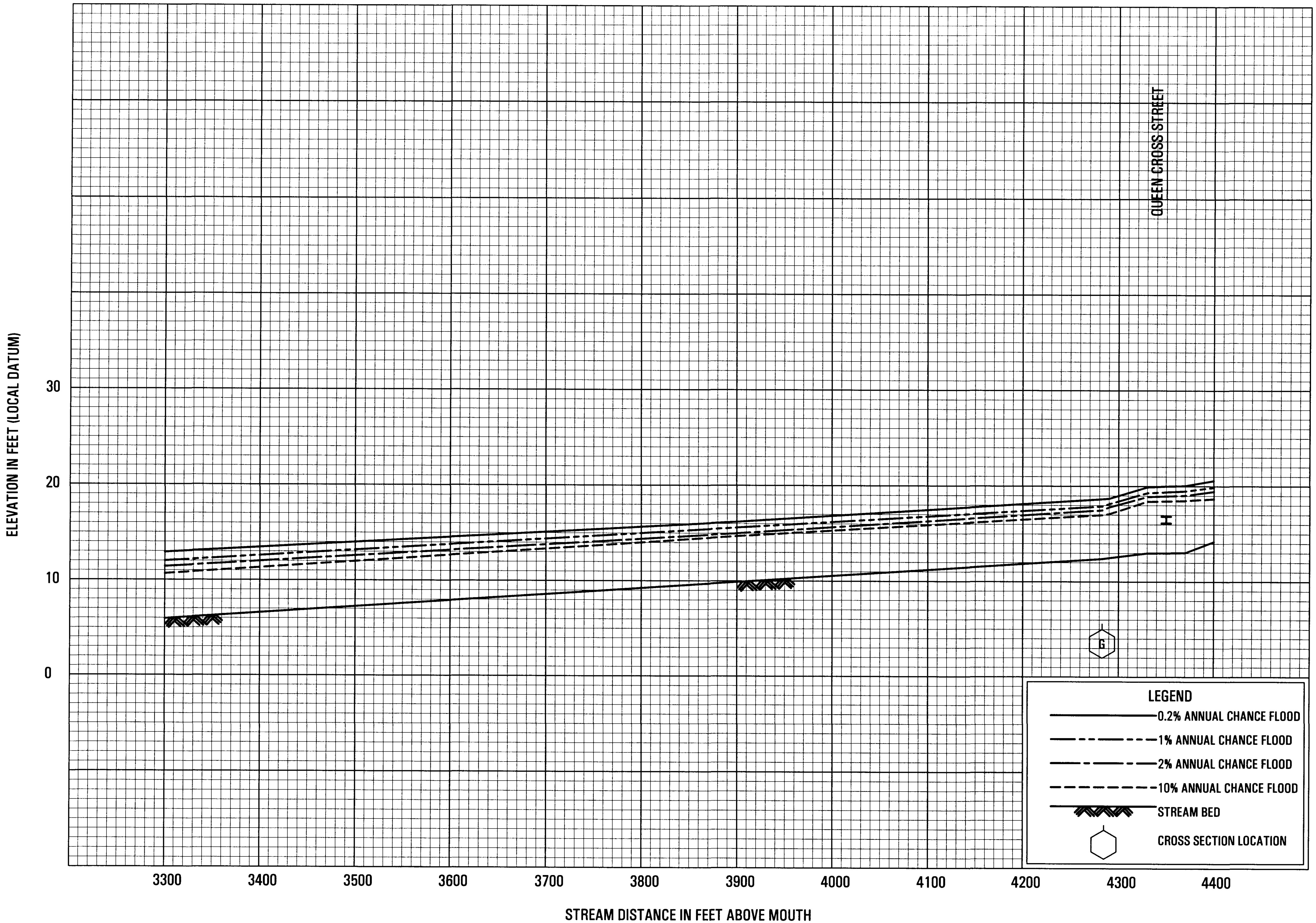
GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

25P



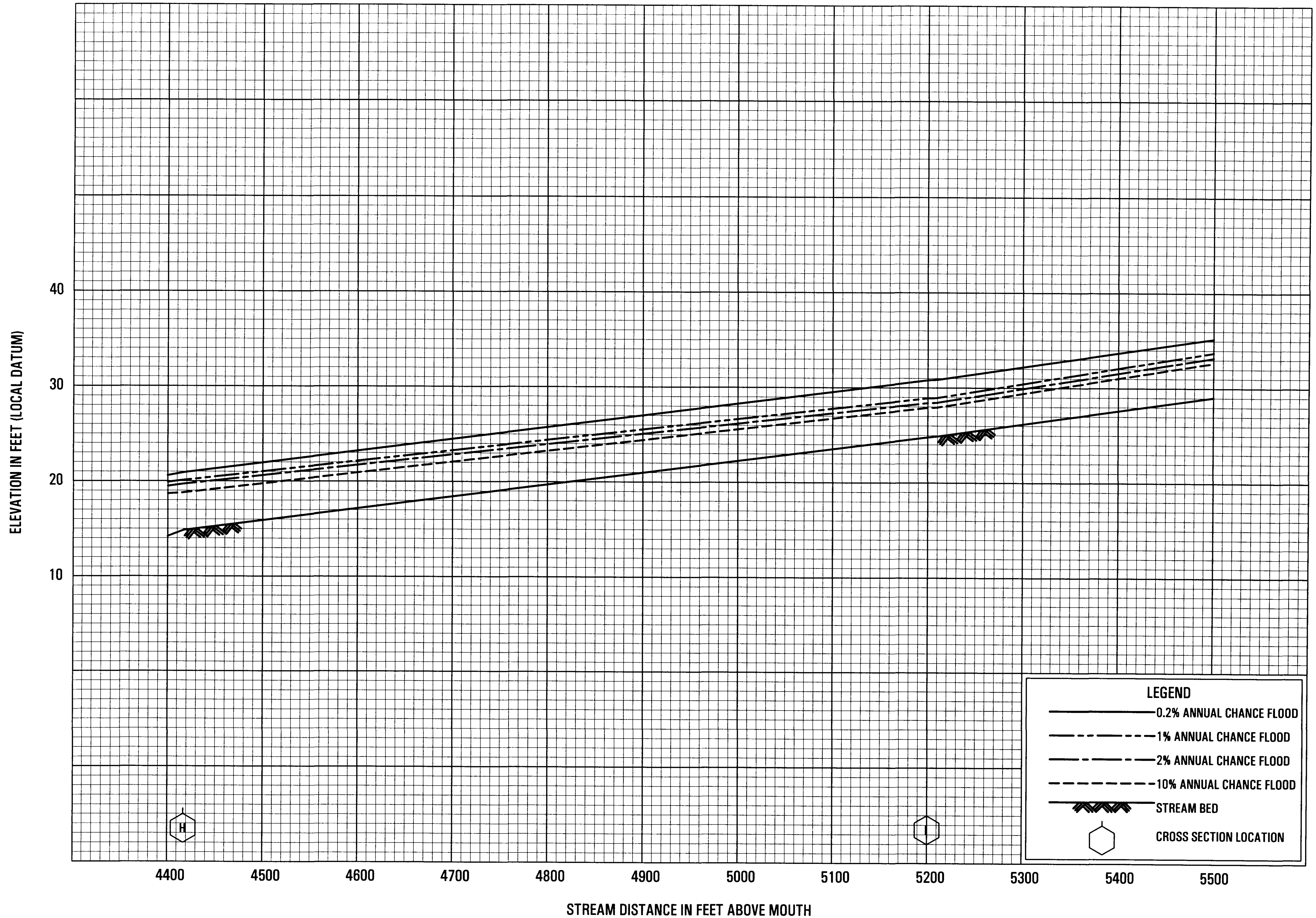
FLOOD PROFILES

GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



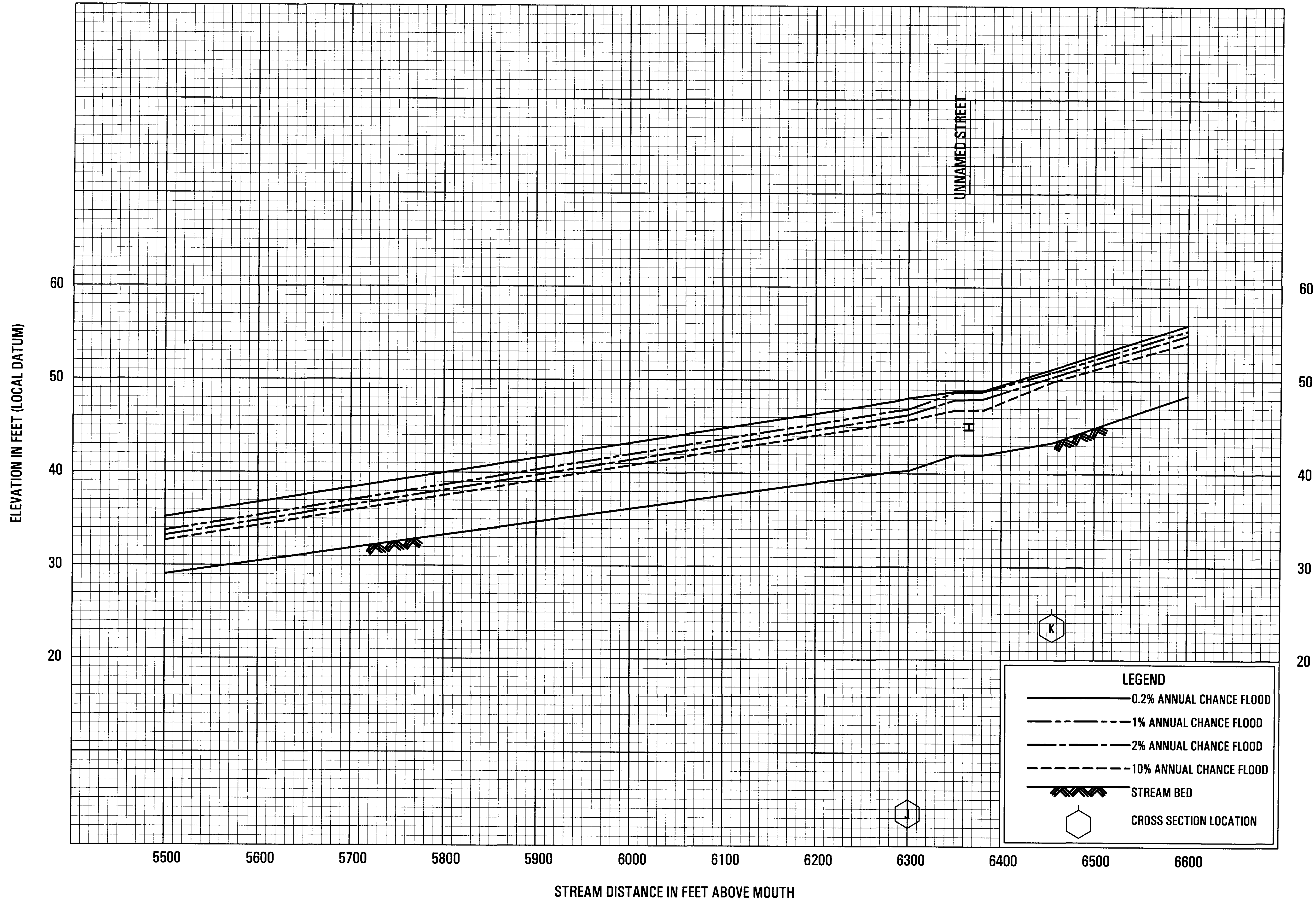
FLOOD PROFILES

GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX

27P



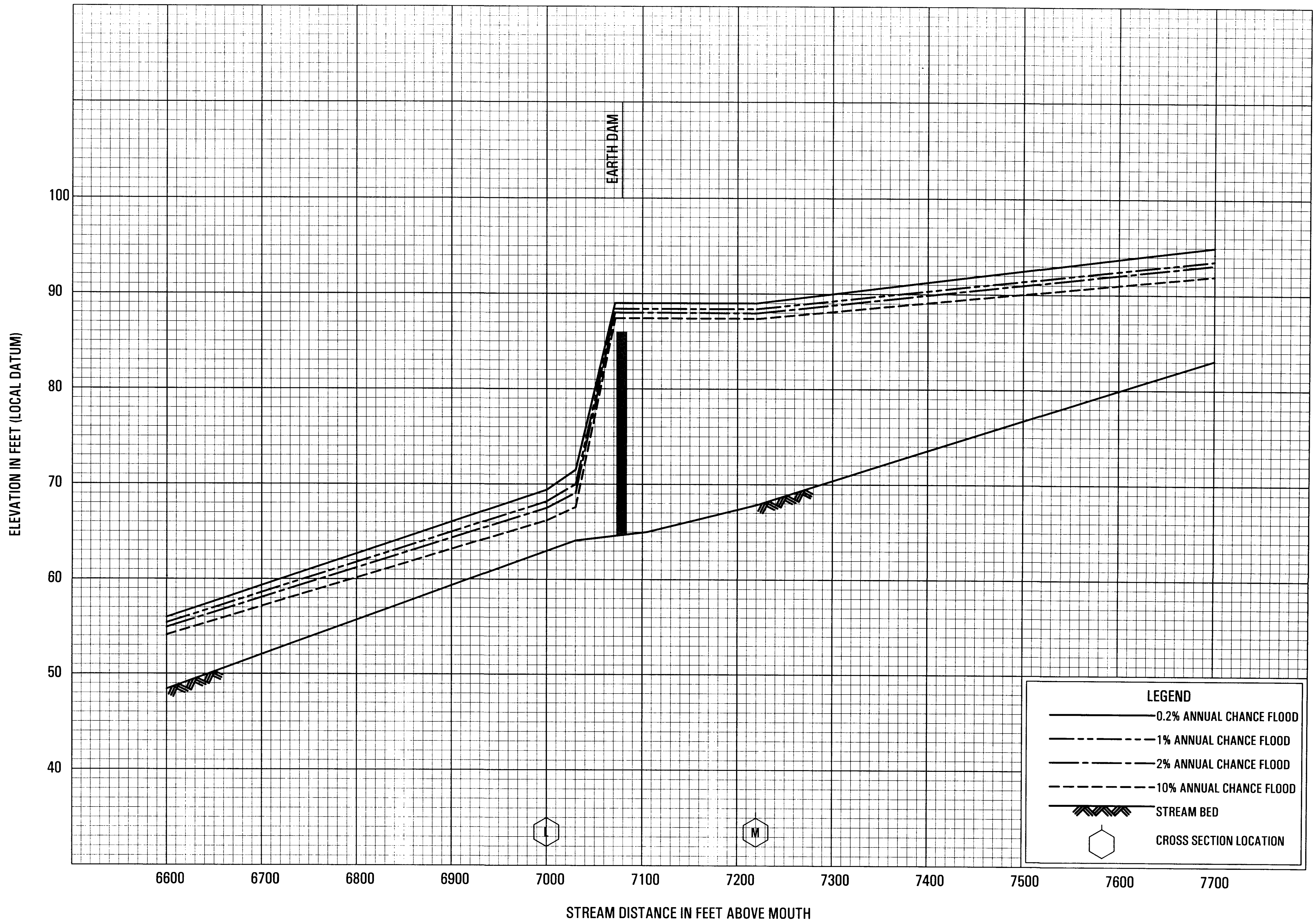
FLOOD PROFILES

GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



FLOOD PROFILES

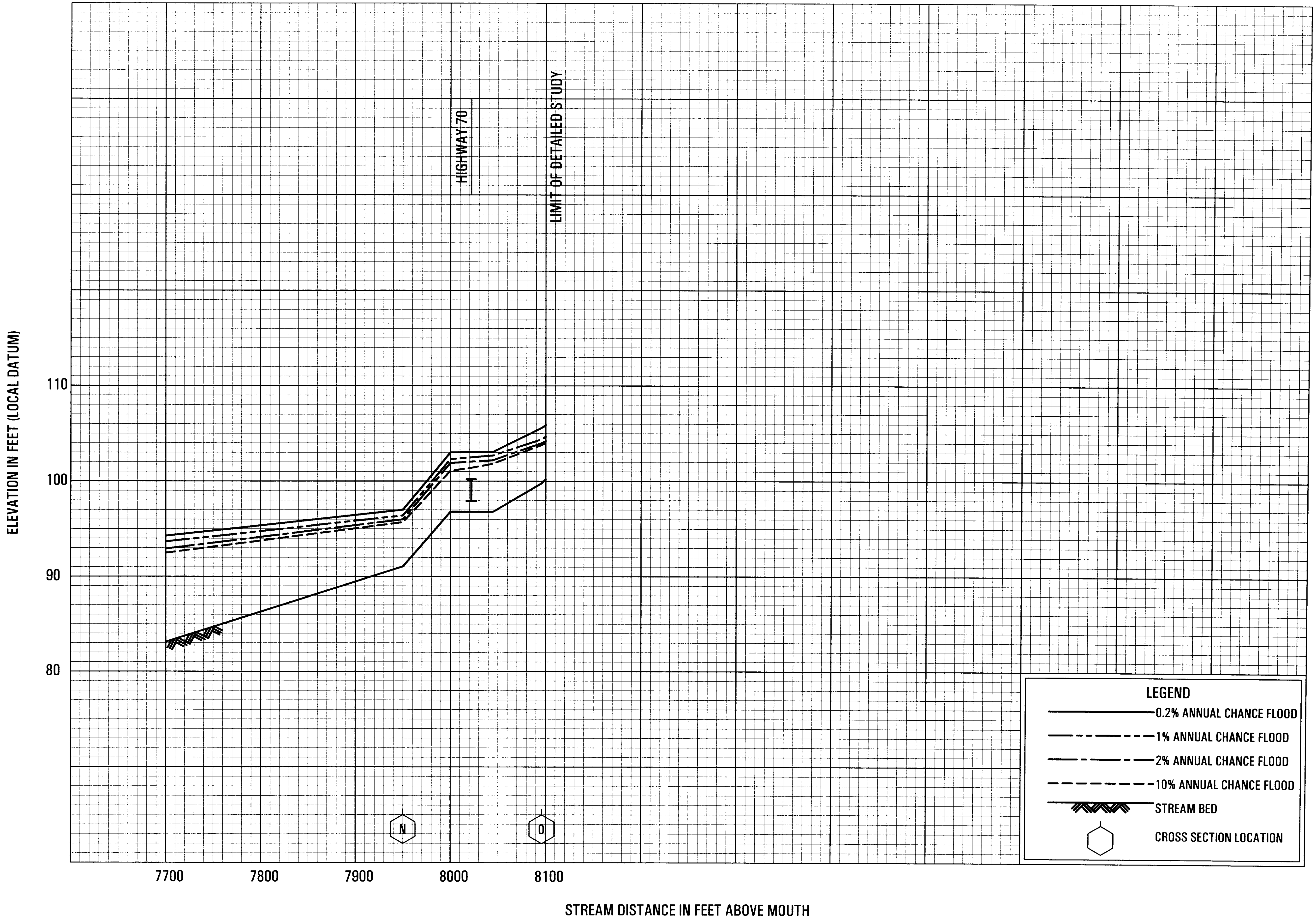
GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

29P



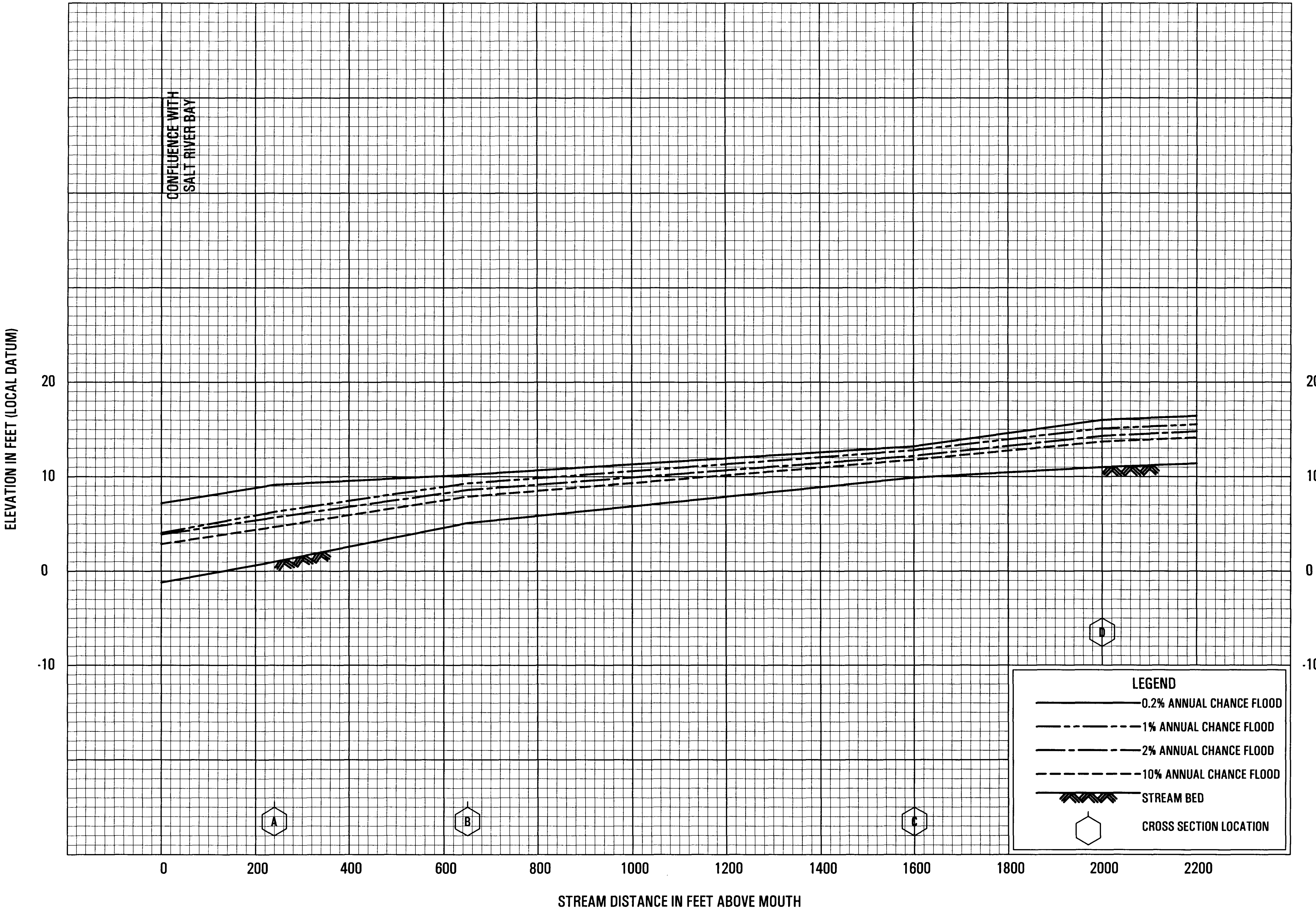
FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

FLOOD PROFILES

GUT NO. 6



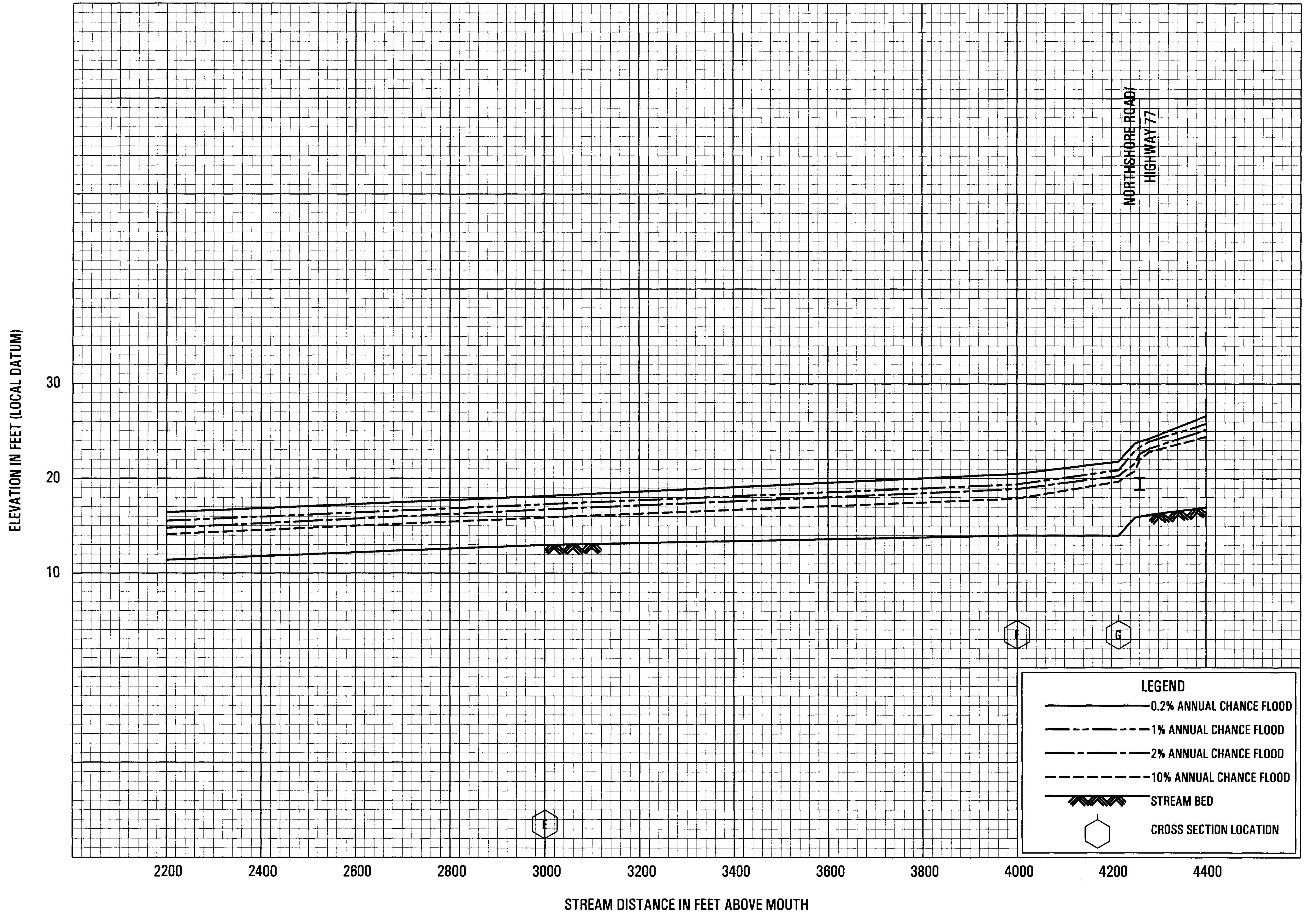
FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



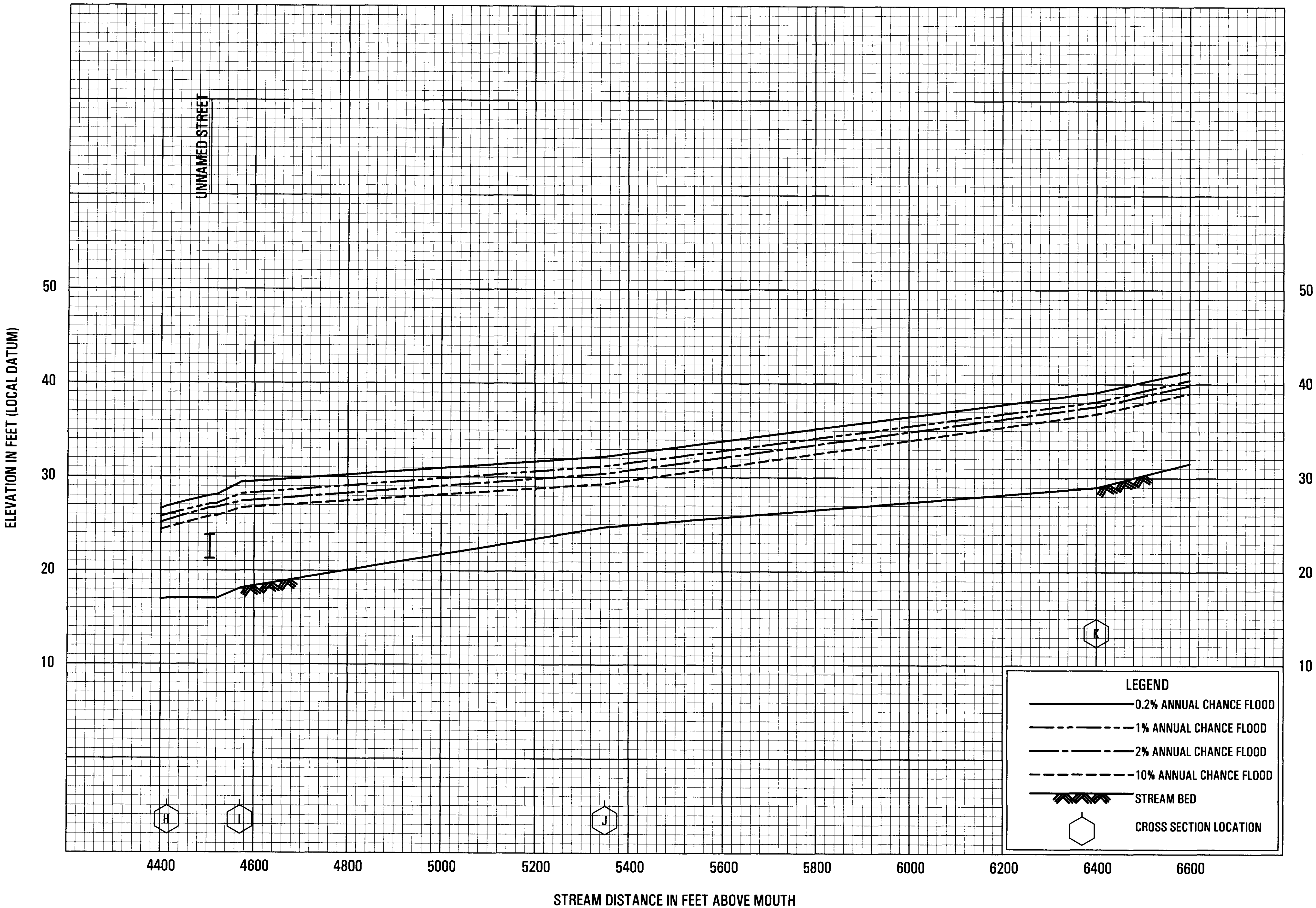
FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX



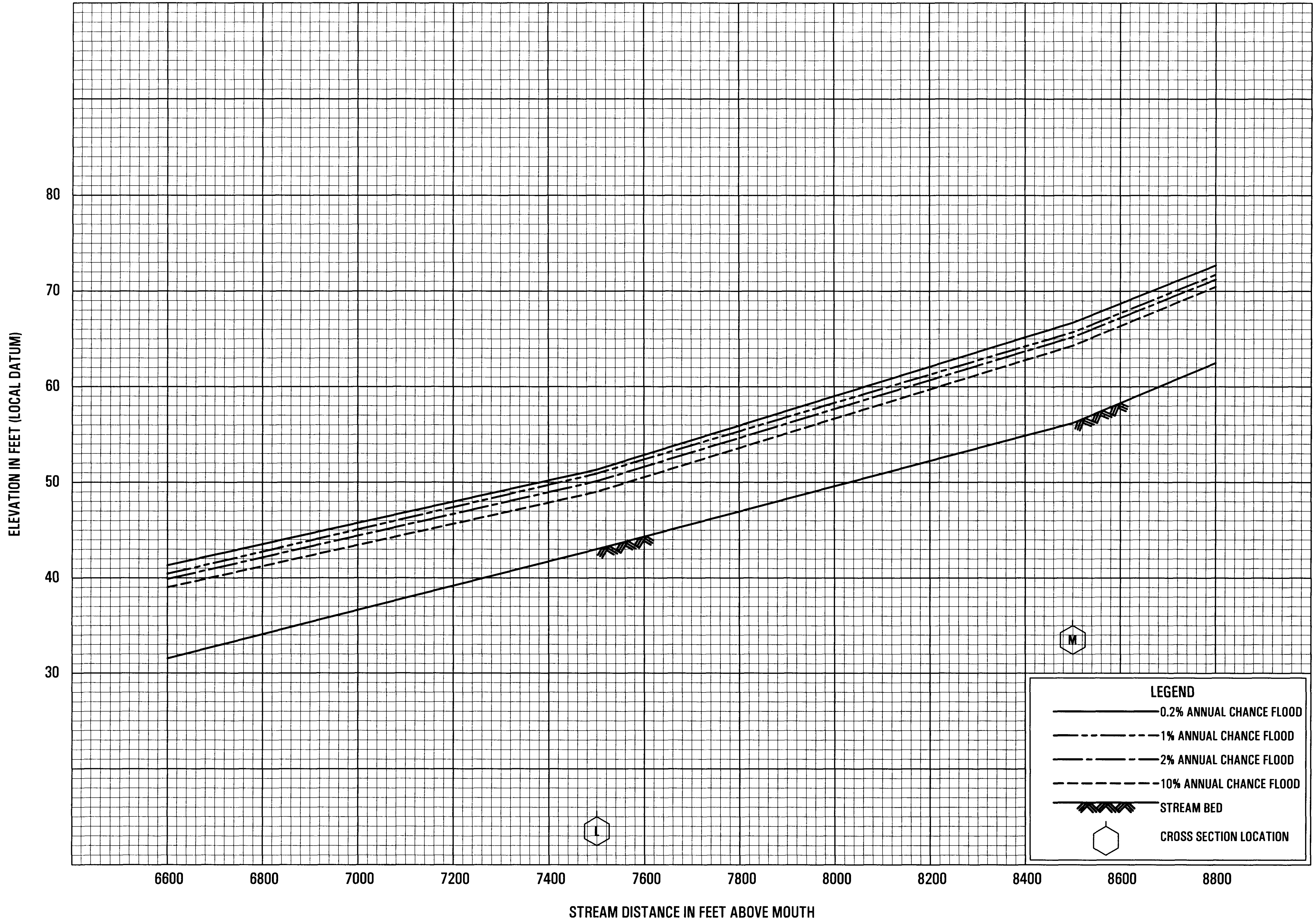
FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

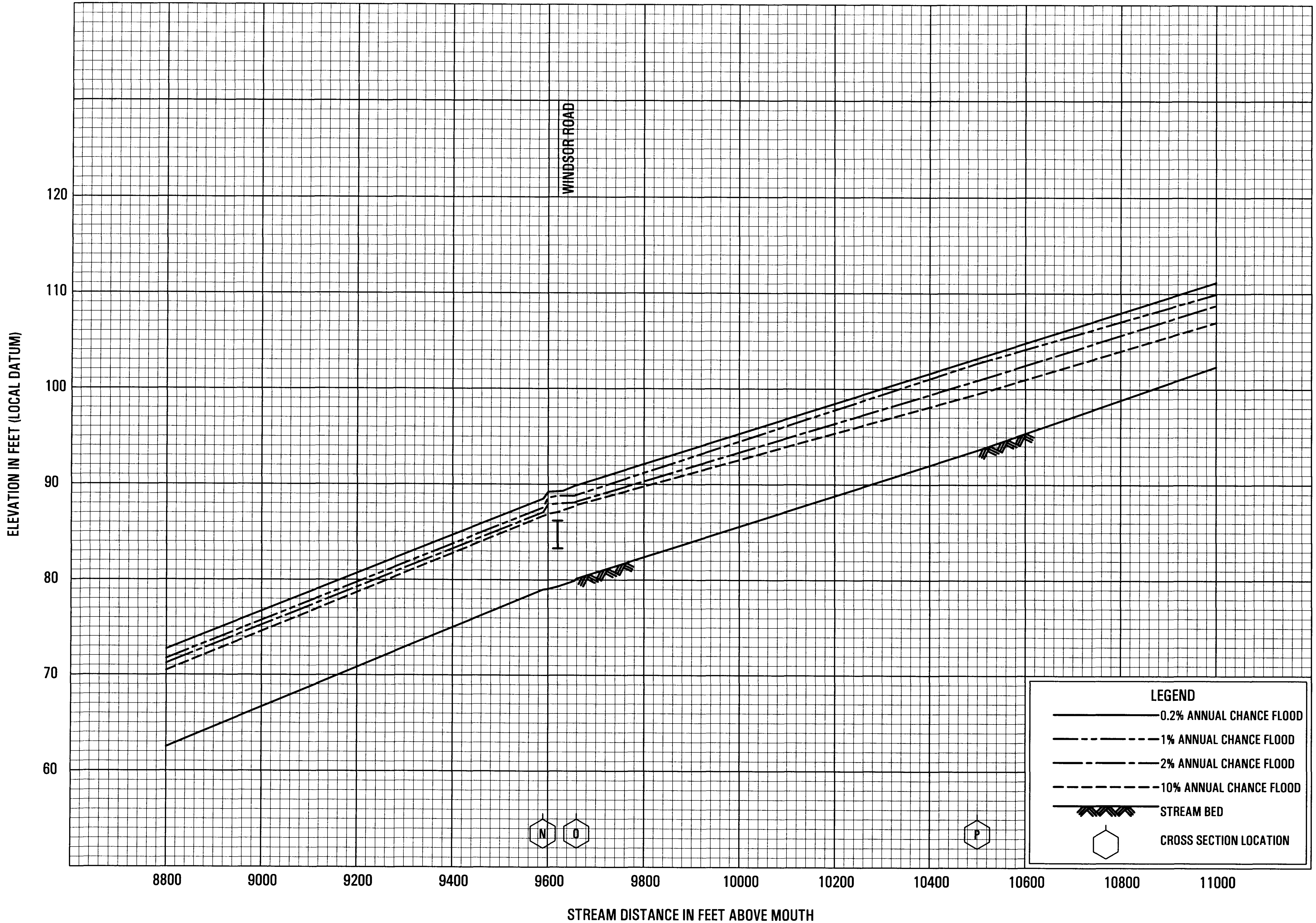


FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX



FLOOD PROFILES

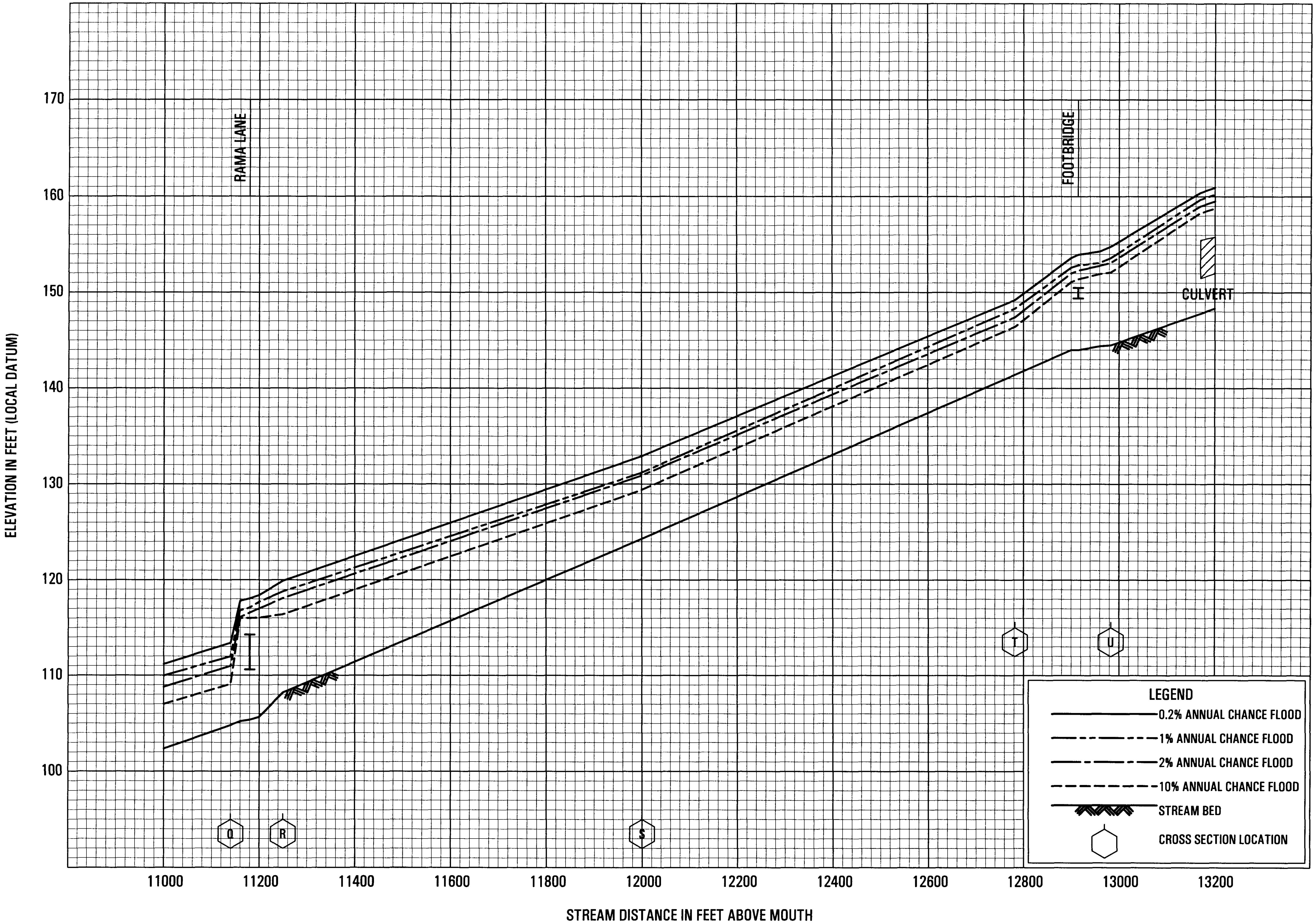
SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

35P



FLOOD PROFILES

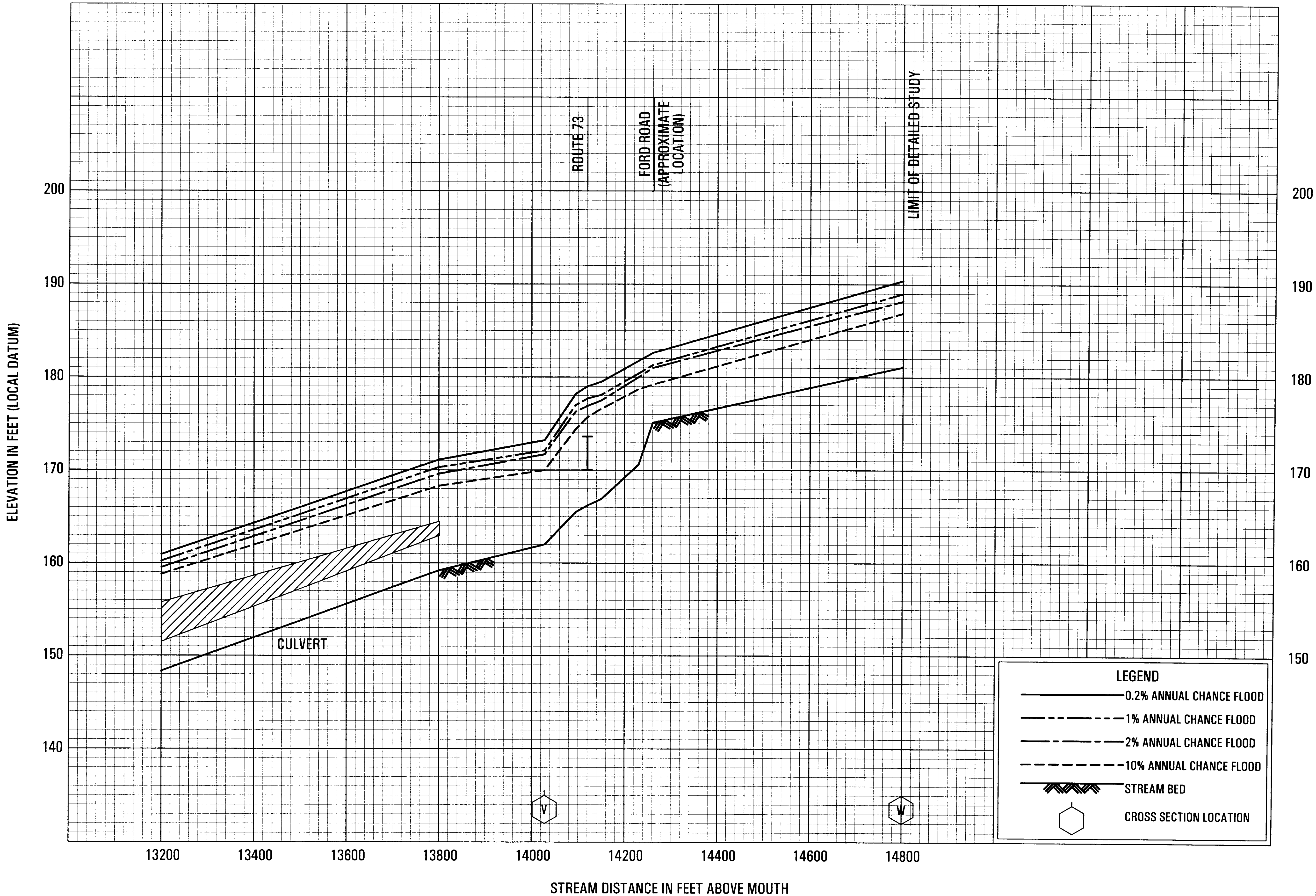
SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

36P



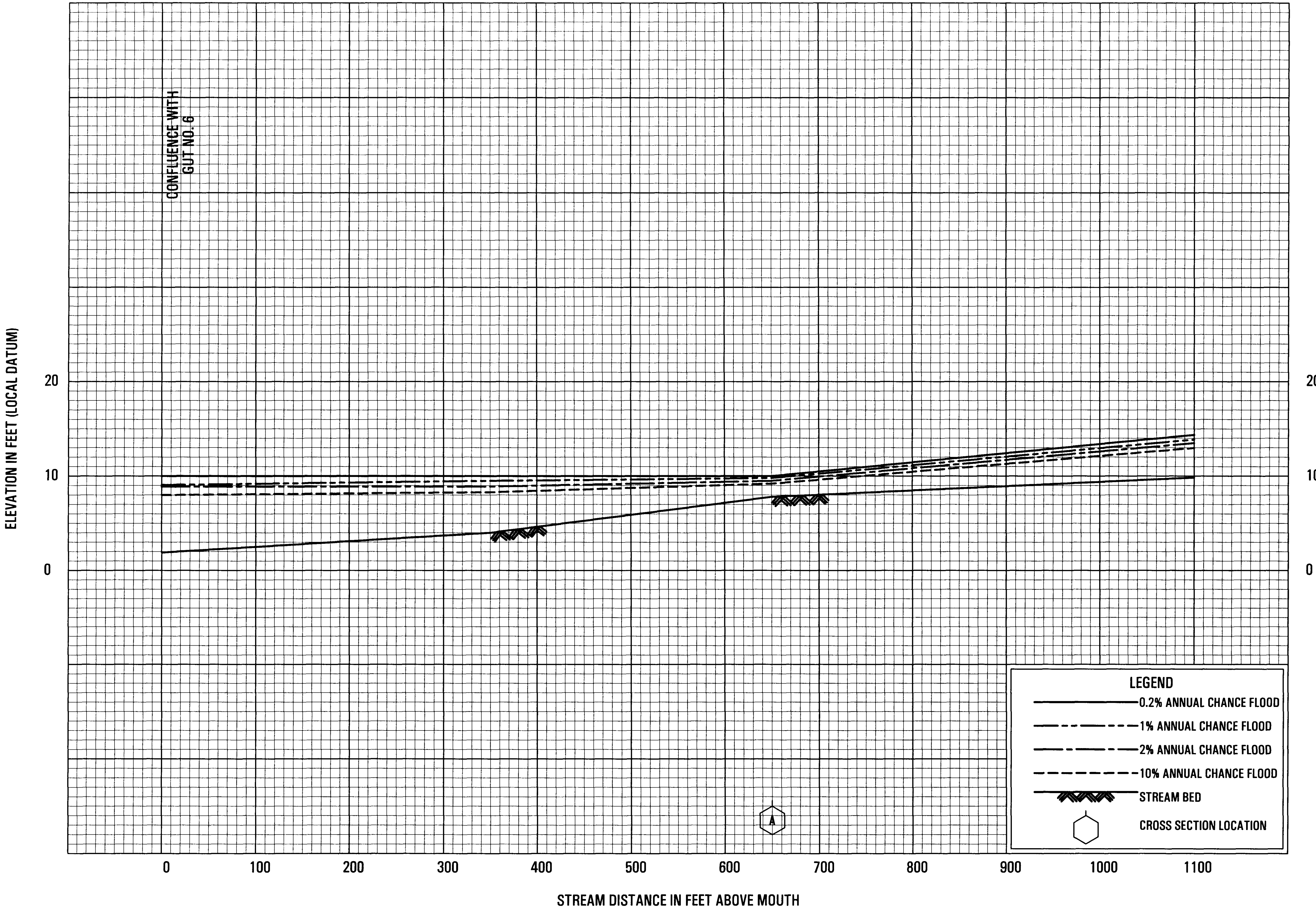
FLOOD PROFILES

SALT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

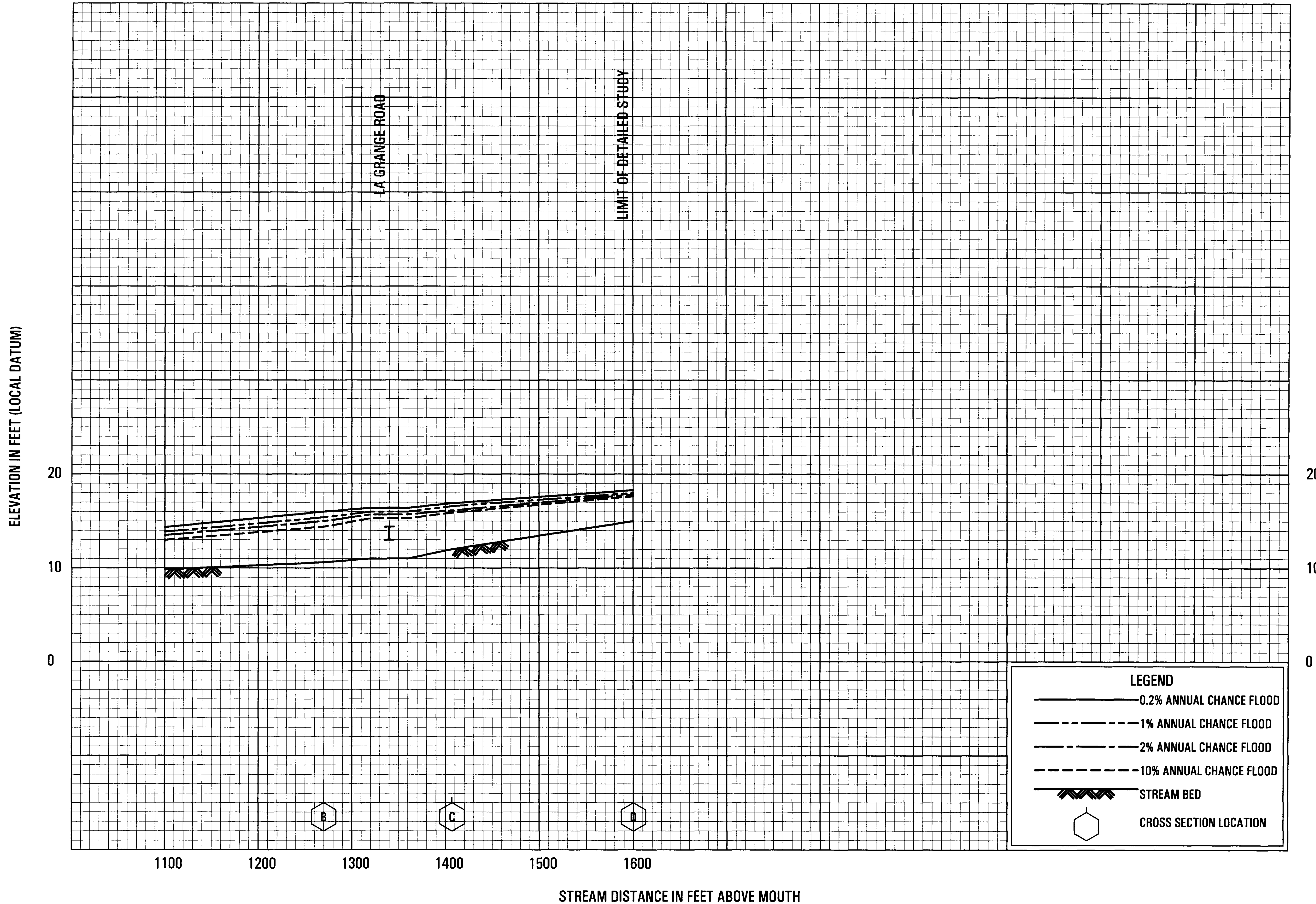


FLOOD PROFILES

TRIBUTARY TO GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. CROIX



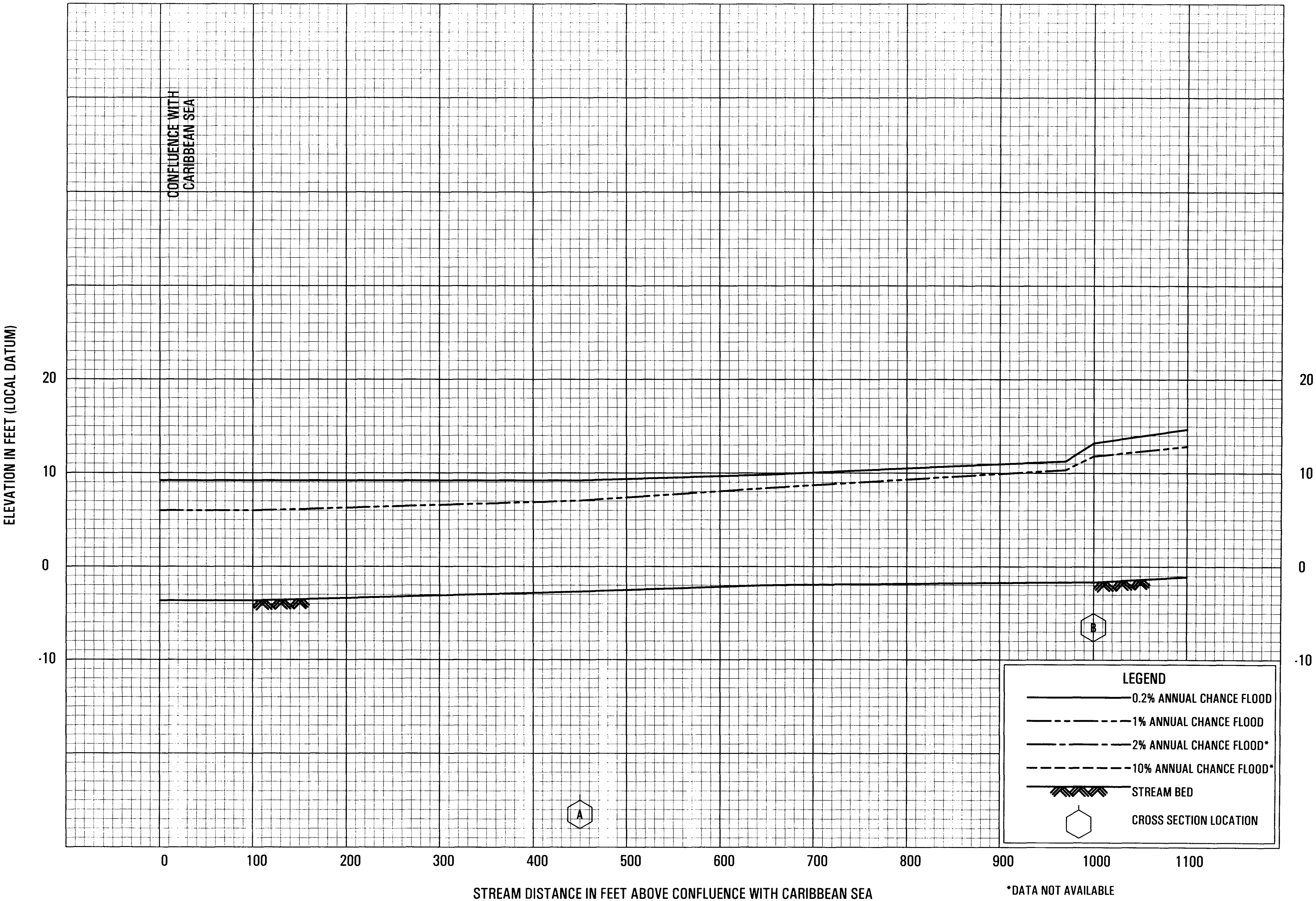
FLOOD PROFILES

TRIBUTARY TO GUT NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX

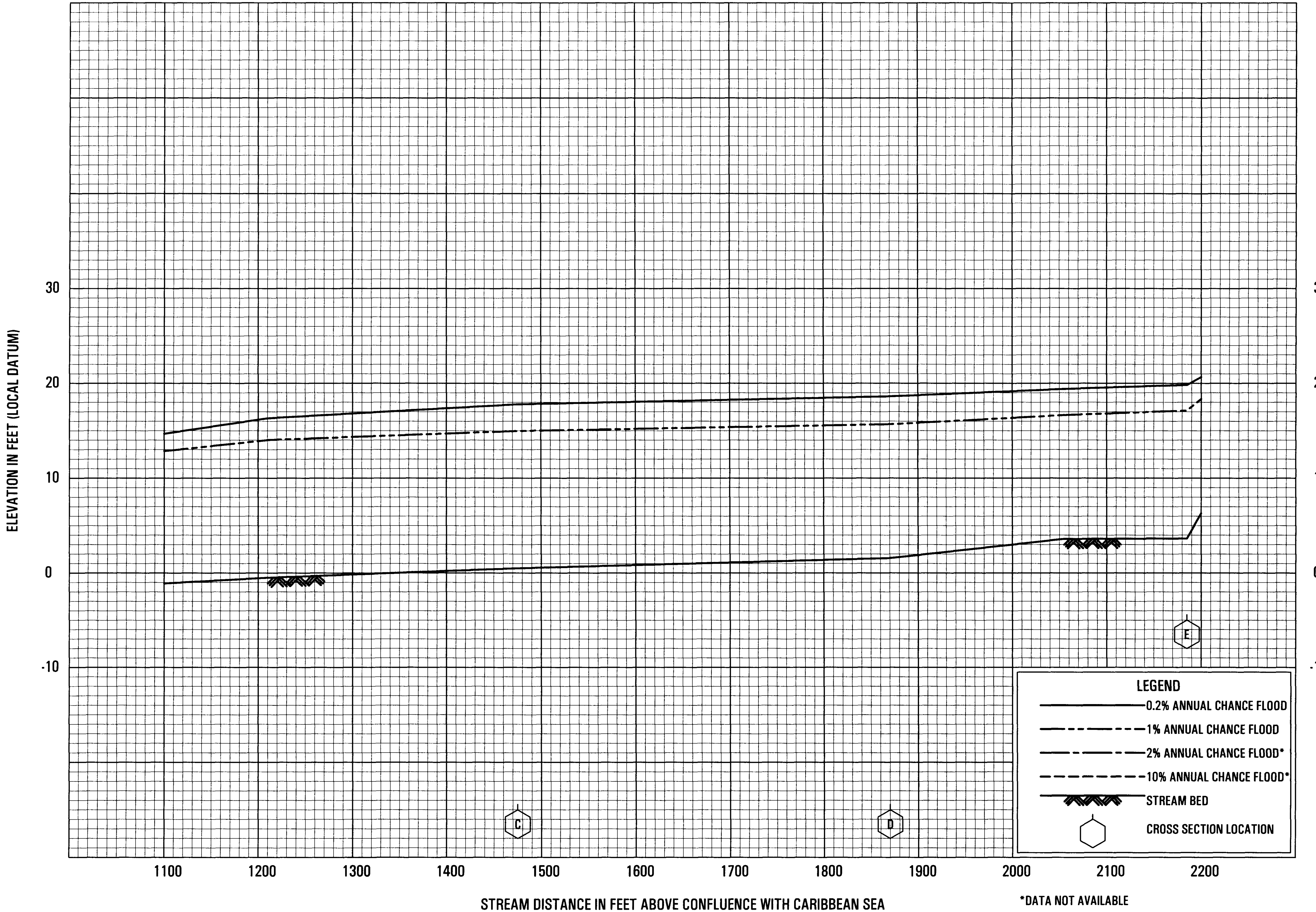


FLOOD PROFILES

TURPENTINE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS, ISLAND OF ST. THOMAS



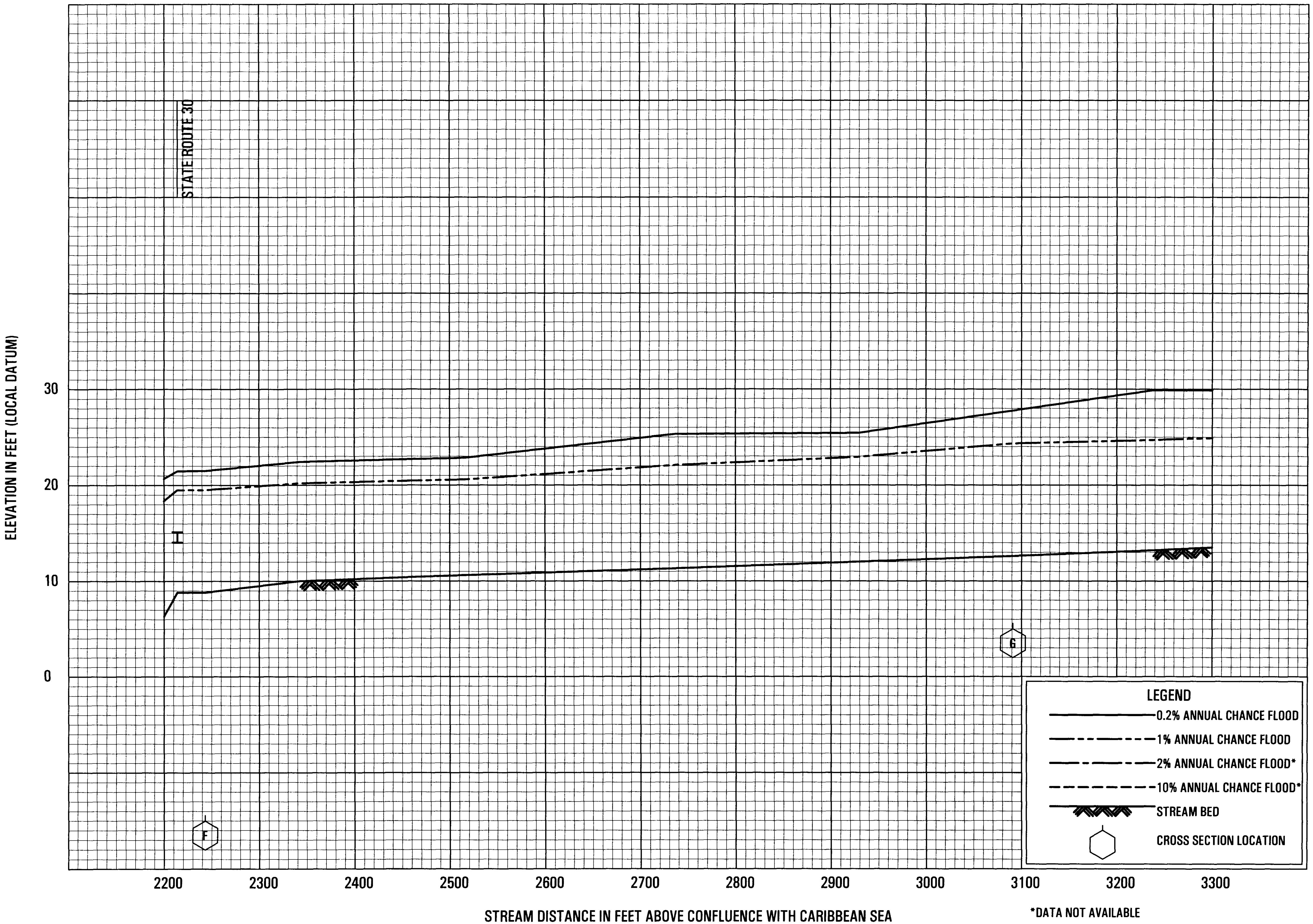
FLOOD PROFILES

TURPENTINE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. THOMAS



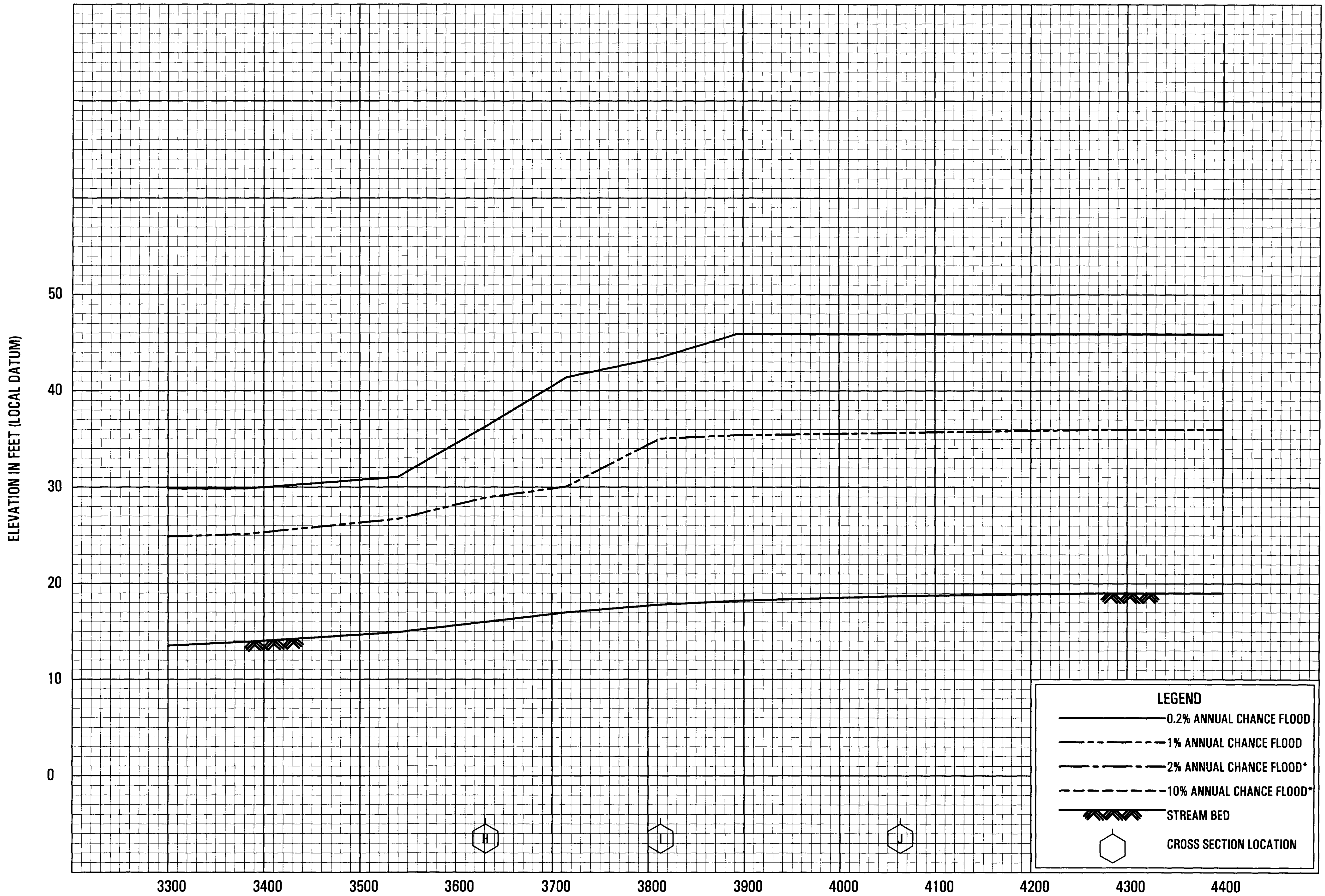
FLOOD PROFILES

TURPENTINE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. THOMAS



*DATA NOT AVAILABLE

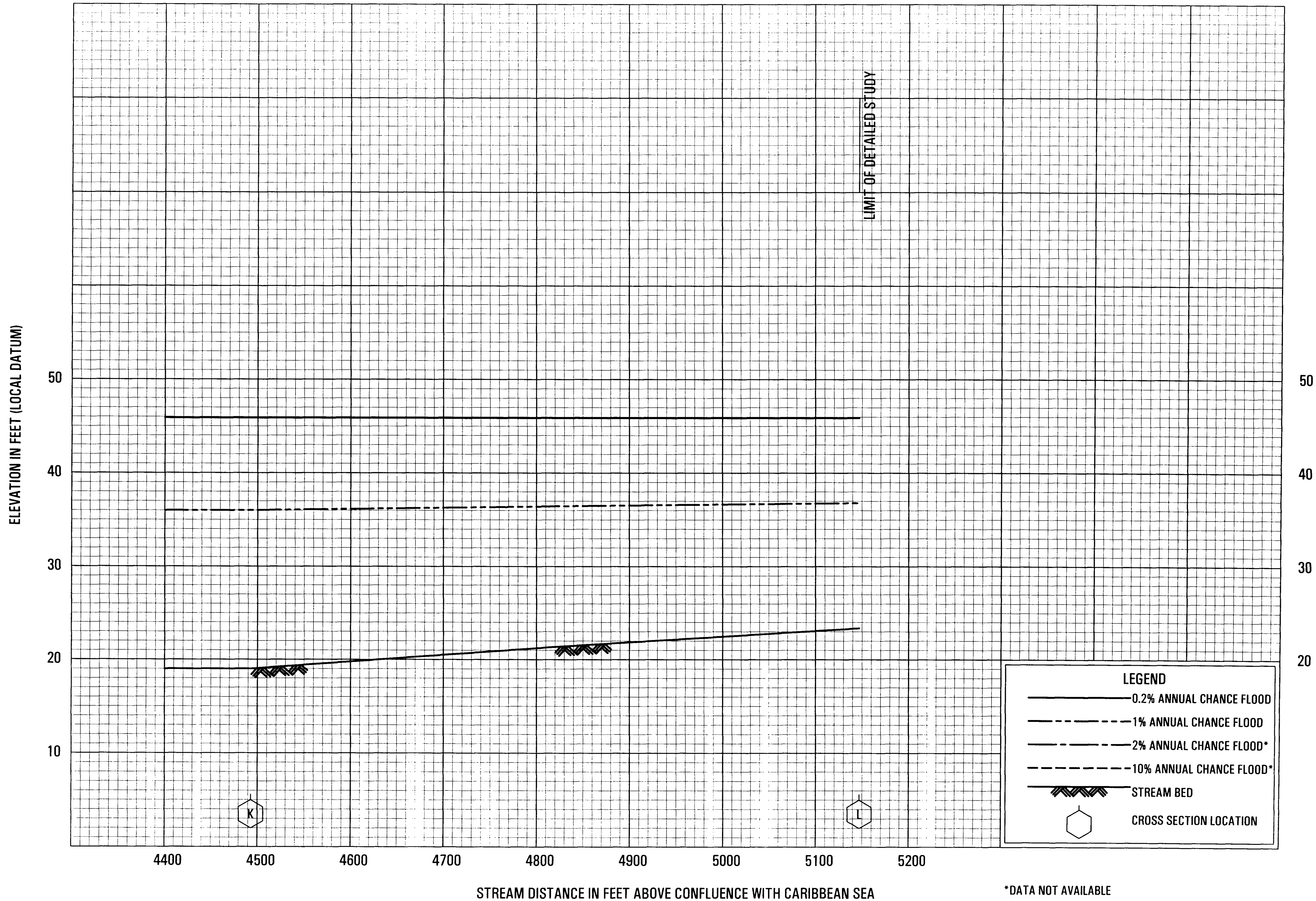
FLOOD PROFILES

TURPENTINE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. THOMAS



*DATA NOT AVAILABLE

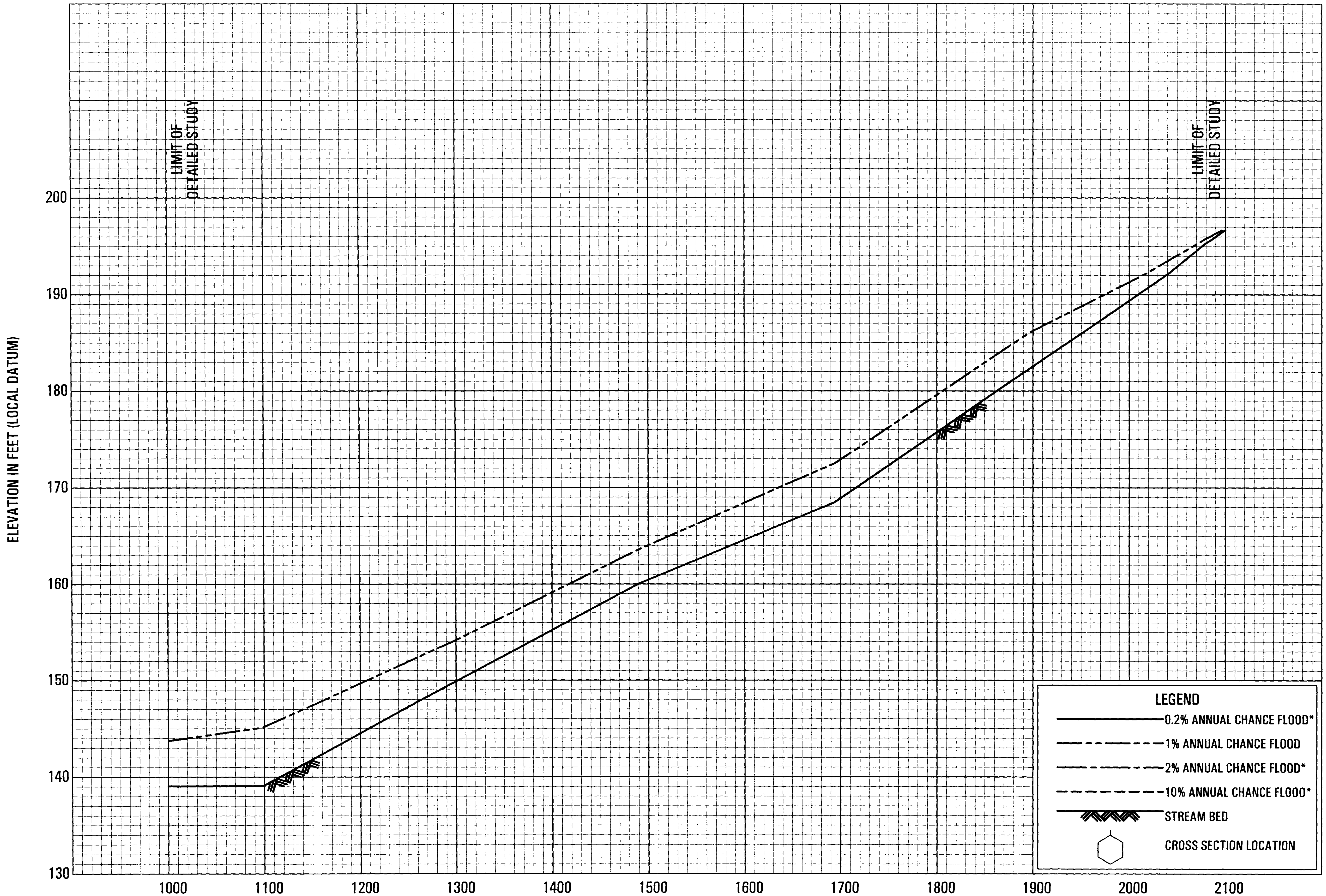
FLOOD PROFILES

TURPENTINE RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. THOMAS



STREAM DISTANCE IN FEET ABOVE LIMIT OF DETAILED STUDY **

* DATA NOT AVAILABLE

** LIMIT OF DETAILED STUDY IS LOCATED APPROXIMATELY 3,900 FEET UPSTREAM OF THE CONFLUENCE WITH COAKLEY BAY

FLOOD PROFILES

UNNAMED TRIBUTARY TO COAKLEY BAY

FEDERAL EMERGENCY MANAGEMENT AGENCY

U.S. VIRGIN ISLANDS,

ISLAND OF ST. CROIX